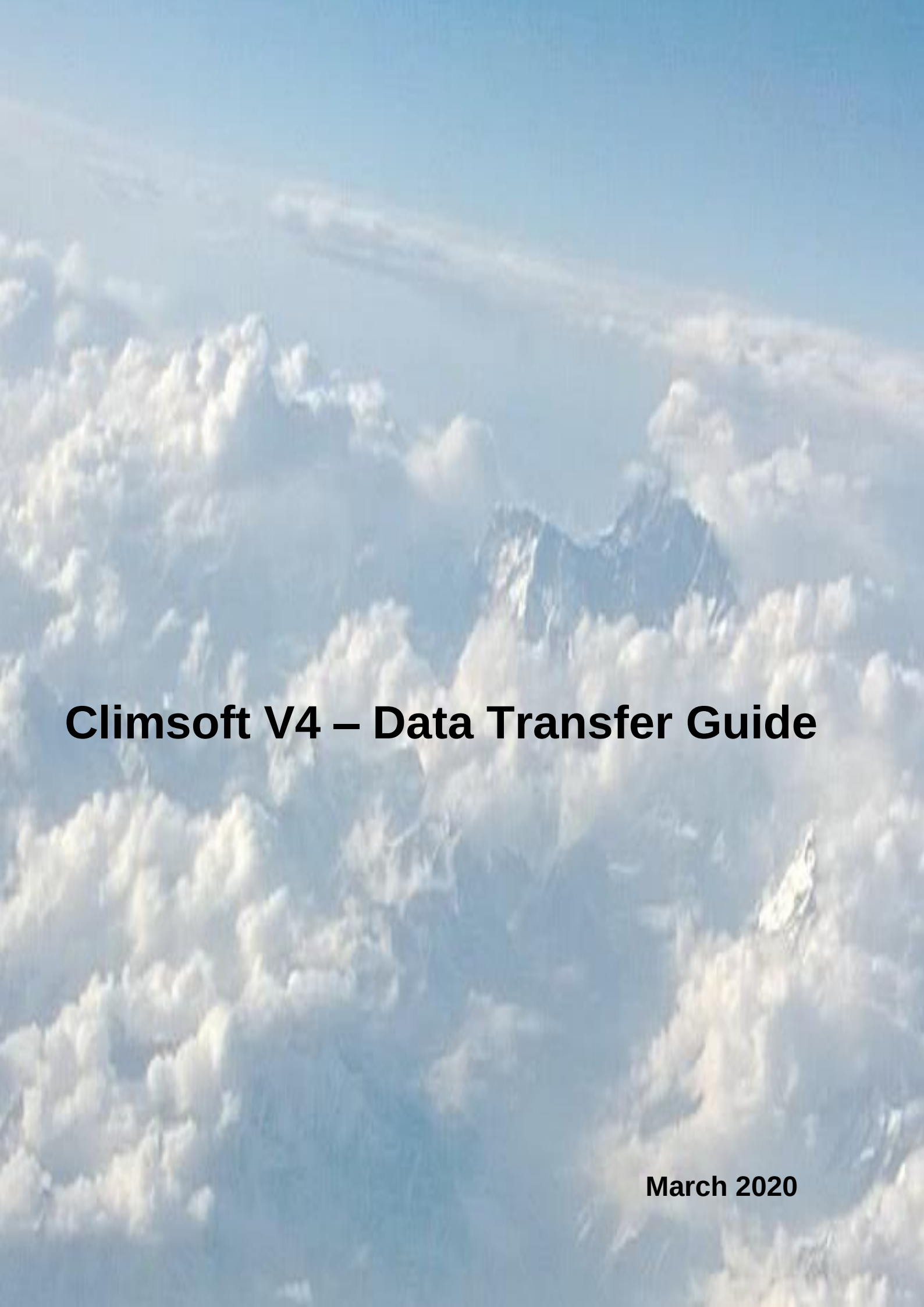


Climsoft V4 – Data Transfer Guide

March 2020

Table of Contents

1. Introduction

Welcome to Climsoft version 4 Data transfer guide. This guide will instruct you on how to import data from different sources into Climsoft. It will also show you how to migrate your data from the earlier versions of clmsoft to Climsoft version 4. There are two (2) types of data transfer operations in Climsoft version 4:

1) Internal Data Transfer Operations;
2) External Data Transfer Operations

2. Internal Data Transfer Operations

These operations includes the upload of data from data entry forms to observationinitial table where the quality control is performed and the transfer of data from the observationinitial table to observationfinal table.

All data-entry forms have got an "**Upload**" button (green) for transferring data from the key-entry form table to a common table named "**observationInitial**" where more Quality Control (QC) checks are carried out.

Note: *This button is not enabled for a user with the role of operator, but is enabled for users with the role of operator supervisor, QC and administrator (Figure1).*

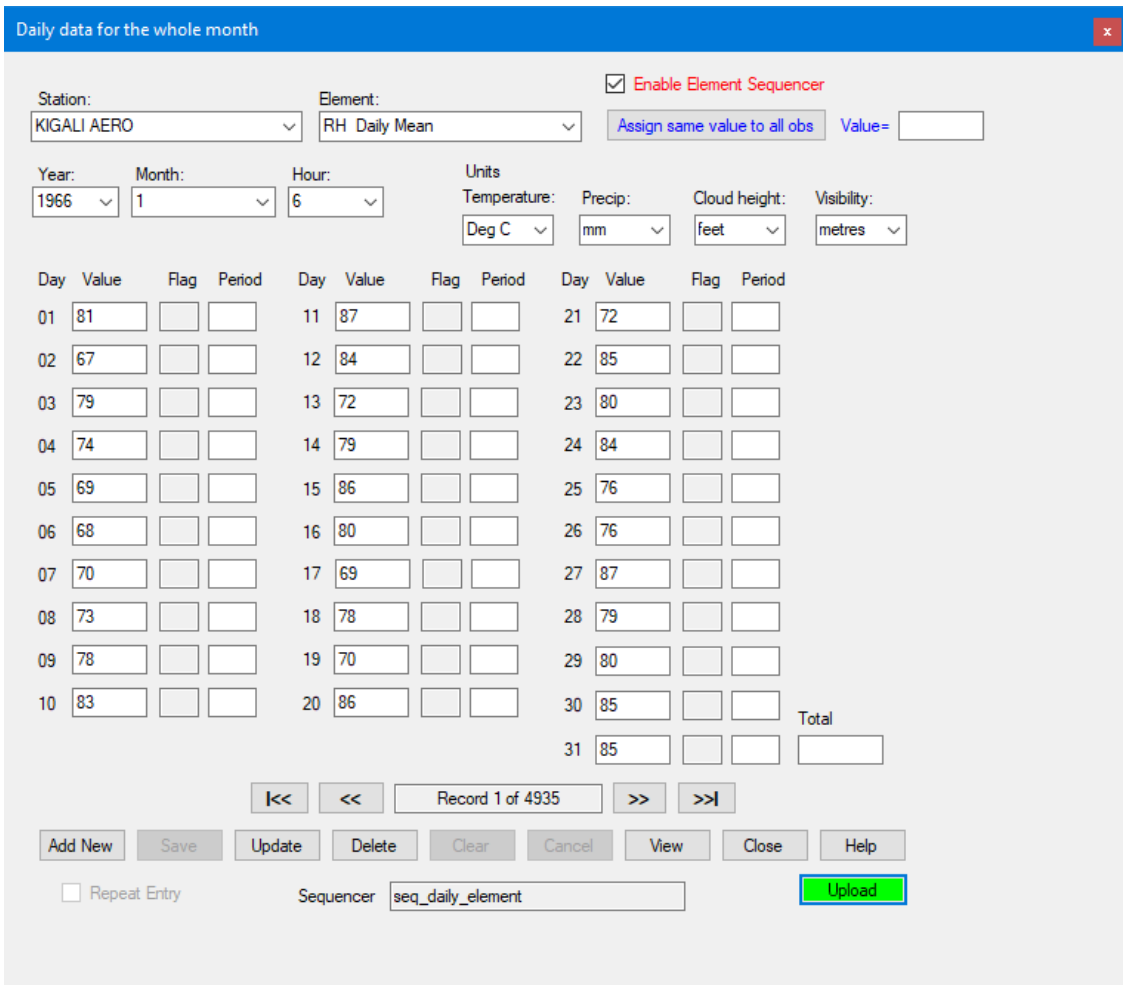


Figure1 - Initiate the Transfer of data from the data entry form to observationInitial via the Upload button

When the **upload** button clicked, it will display the dialog below where the user specify the data for which Stations and the period range (Begin Year, End Year, Begin Month and End Month) of data to be transferred from the selected data entry form to the **observationInitial table.** After selecting the **start** button data transfer process will start immediately and the progress will be displayed at the progress bar.

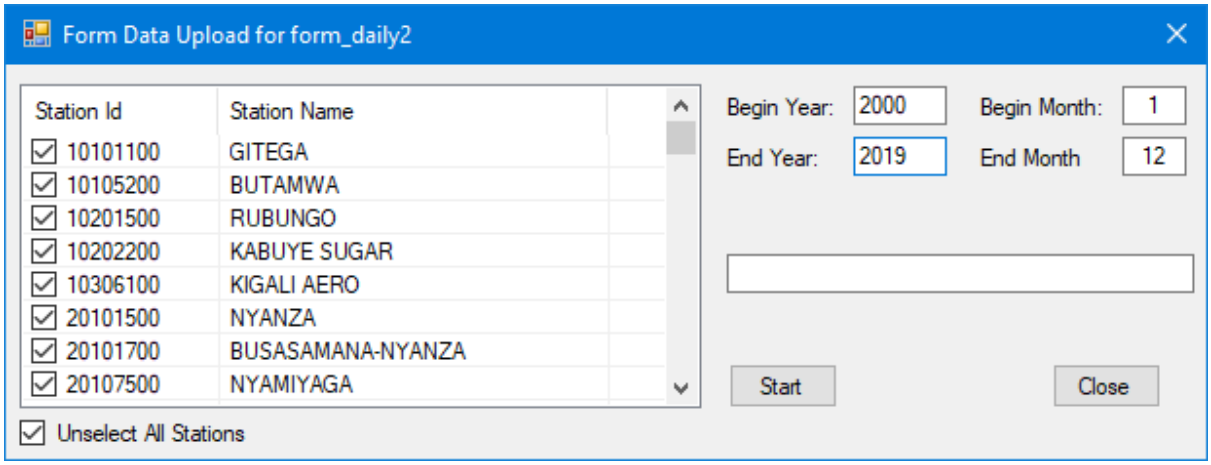


Figure2 - Uploading data from the data entry form to observationInitial via the Start button

Once data has been successfully transferred into **"observationInitial table**", the quality control is performed and when finished, data will then be transferred to **"observationFinal table".**

Important

*It should be noted that only data that would have gone through QC will be uploaded to the "**observationFinal**" table. Observation records that have not been QC'd will have a QC status zero "**0**" (qcStatus=0) while records that have been QC'd will have a QC status one "**1**" (qcStatus=1).*

Follow the steps below to transfer data from **observationInitial table** to **observationFinal table:**

Step1: Login into Climsoft with the role of "Quality control" or "Operator supervisor" or "administrator";
Step 2: Click on **"Data transfer"** icon located on the welcome form;
Step 3: Click on **"Upload"** then select **"Obs Initial to Final"** (Figure3);

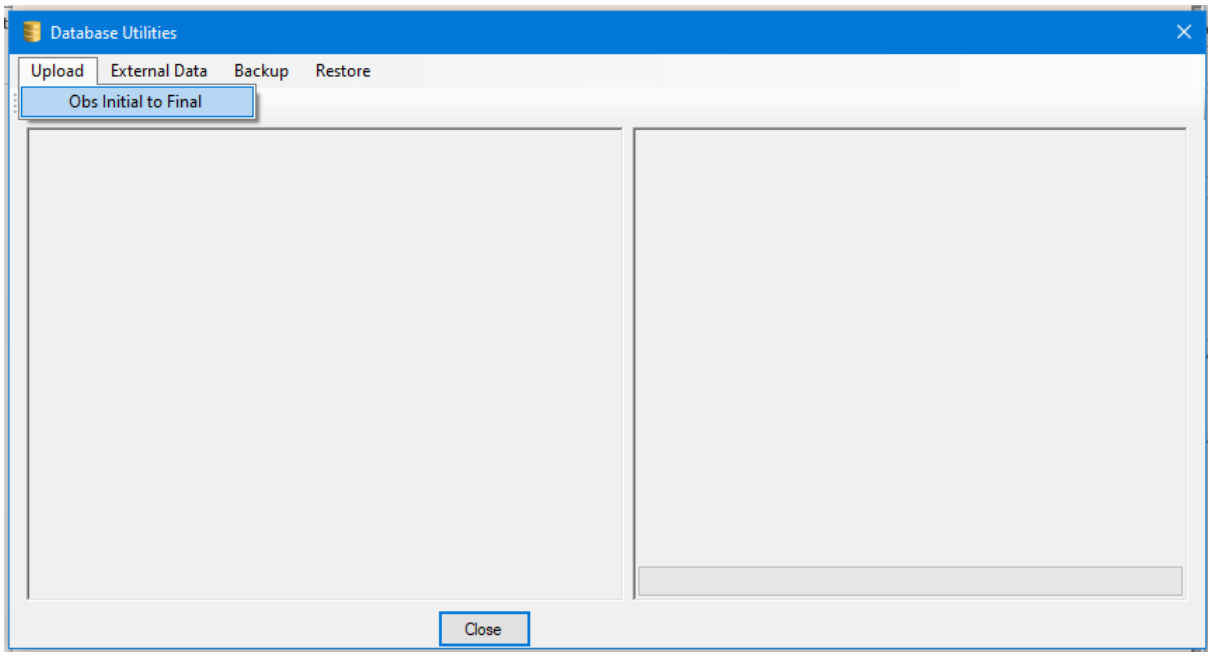


Figure3 - Initiate data transfer processing from the observationInitial to the observationFinal

Step 4: Select "**Obs Initial to Final**" to open the dialog below (Figure 4) and fill the form with the details of the stations, elements and period range of data you want to transfer (Begin year, End year, Begin Month and End Month) and click on the **"Upload"** button to start the process of transferring your data to "observationFinal table" (Figure 4) and watch the progress via the data transfer progress bar. By ticking the "**Select All Stations**" or "**Select All Elements**", you instruct the system to transfer data for all the stations and all elements if existing.

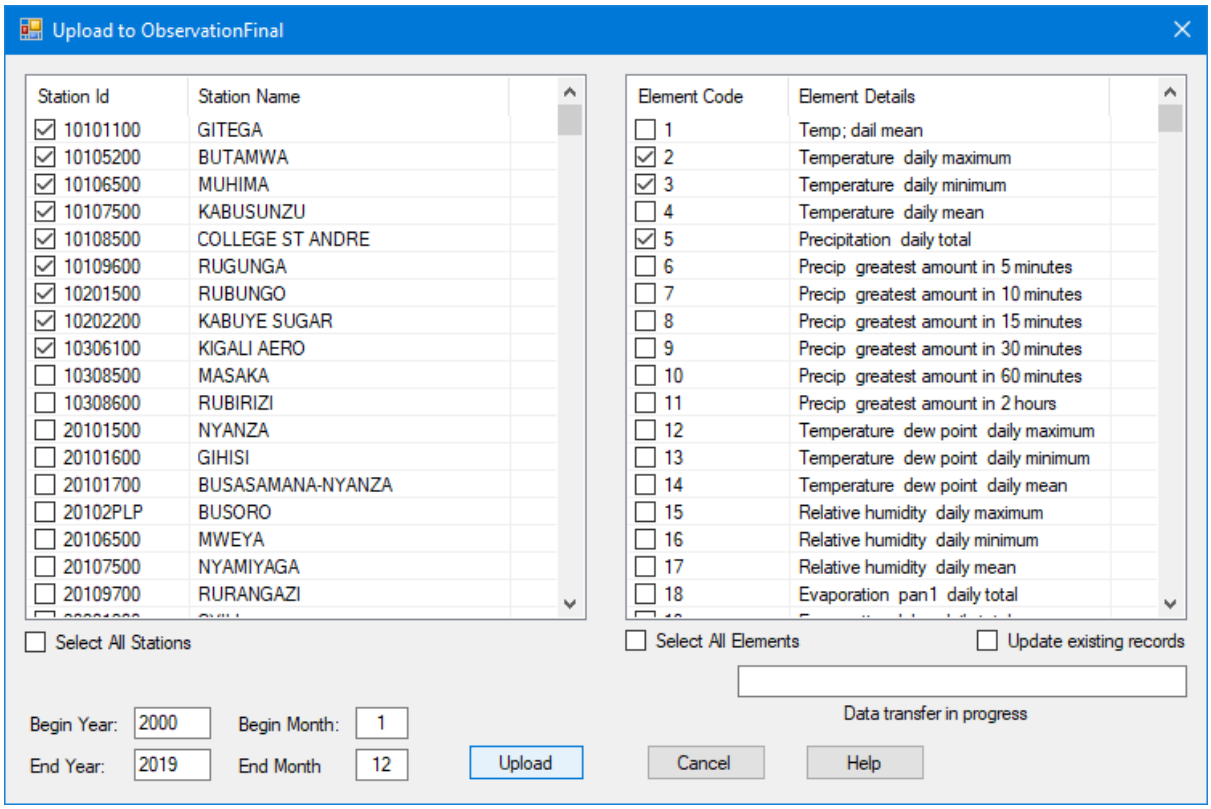


Figure4 - Data transfer operation from "observationInitial" to "observationFinal"

3. External Data Transfer Operations

These operations includes importing data from CLIMSOFT version 3, CLICOM, Automatic Weather Stations (AWSs) and NOAA GTS.

3.1 Data migration

During the process of data migration, data from Climsoft version 3 and earlier versions will be successfully imported into Climsoft version 4.This process is carried out as follows:

Step1: Login into Climsoft as "administrator";
Step 2: Click on **"Data transfer"** icon located on the welcome form;
Step 3: Click on **"External Data**" and select "Data Migration" from the drop down list (Figure 5) to obtain the dialog in (Figure 6) below:

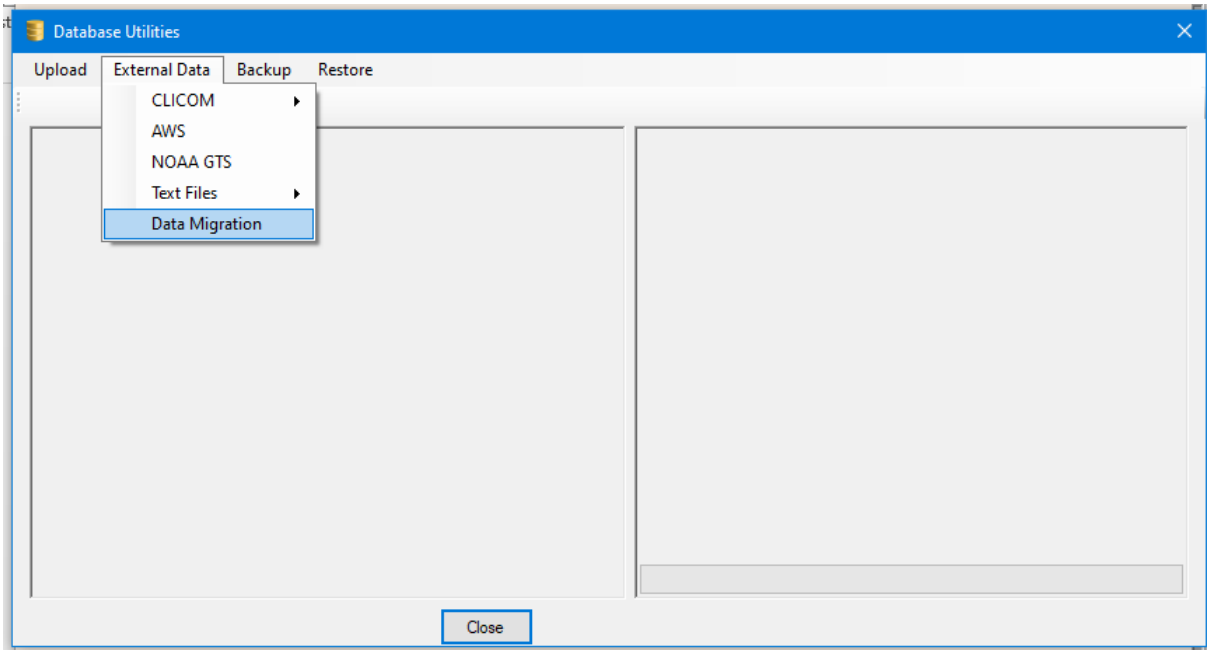


Figure5 - External Data Transfer Dialog

Step 4: The dialog below (Figure 6) is obtained after selecting Dtata Migration ption from the drop down list:

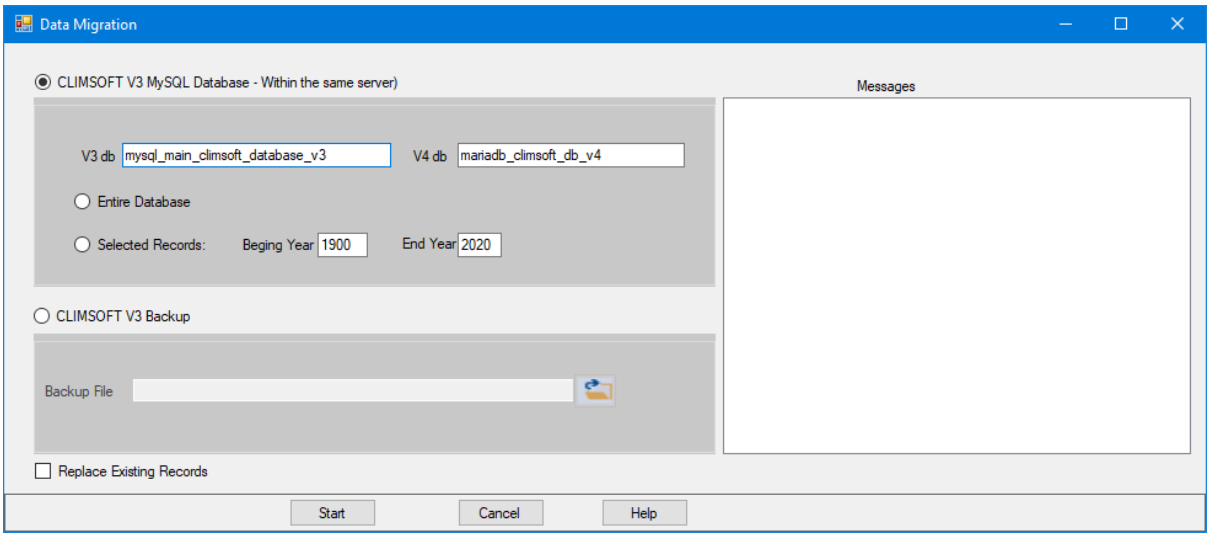


Figure6 - Data Migration Transfer

There are 2 options to import data from Climsoft version 3 to Climsoft version 4

3.1.1 Importing from Climsoft V3 MySQL Database

This operation requires that the entire ClimsoftV3 database be available in MySQL script file e.g.: mysql_main_CLIMSOFT_database_v3.sql.

To import such file into Climsoft version 4, follow the steps below:
Step1: Launch MariaDB Prompt from your program **"Start Menu**", select and click on the "**MySQL Client (MariaDB 10.x)"** as shown below Figure7.

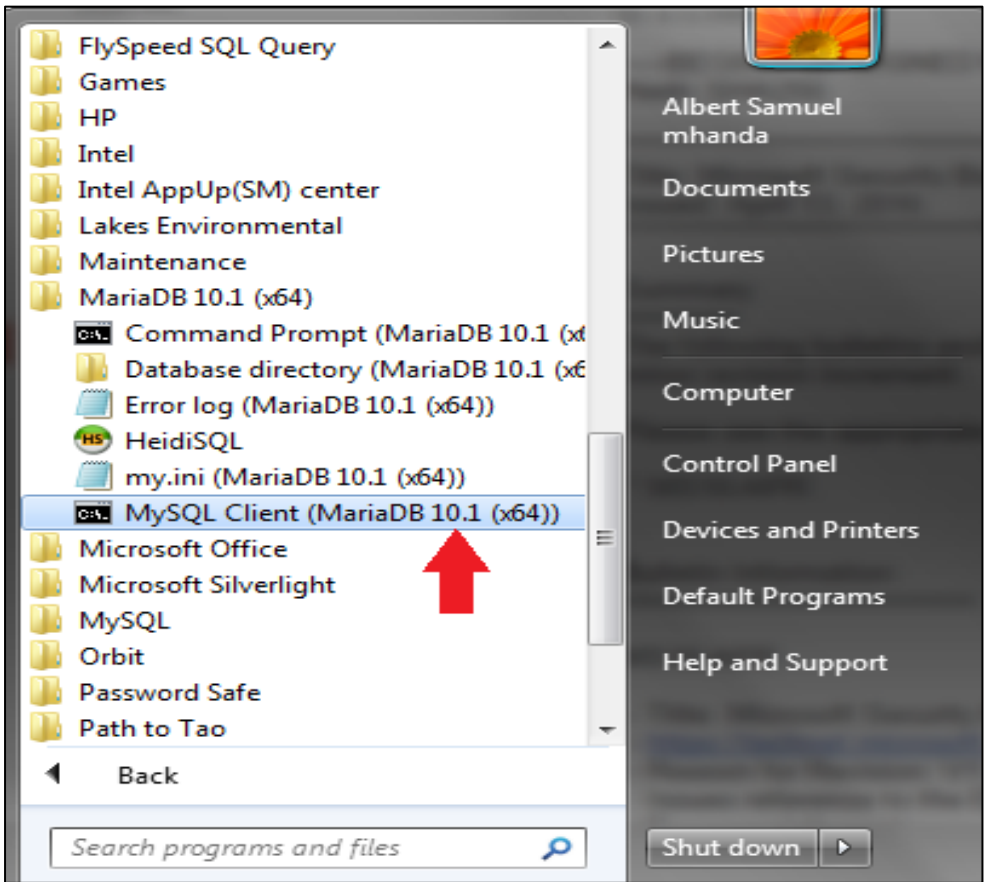


Figure7 - Launching MariaDB Client

Step 2: The dialog for entering the password should then appear as shown in Figure 8 below:

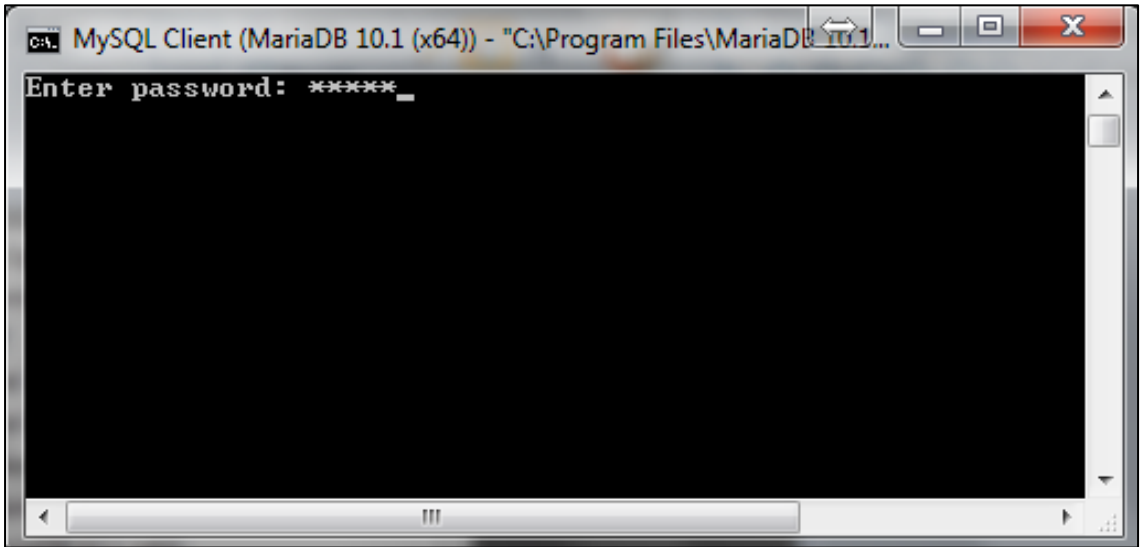


Figure8 - Entering password on MariaDB Client Prompt

Step 3: Type correctly the password for "**root".** If you have entered the correct password i.e. the same password that you entered during the installation of MariaDB, the prompt should then appear as shown in Figure 9 below:

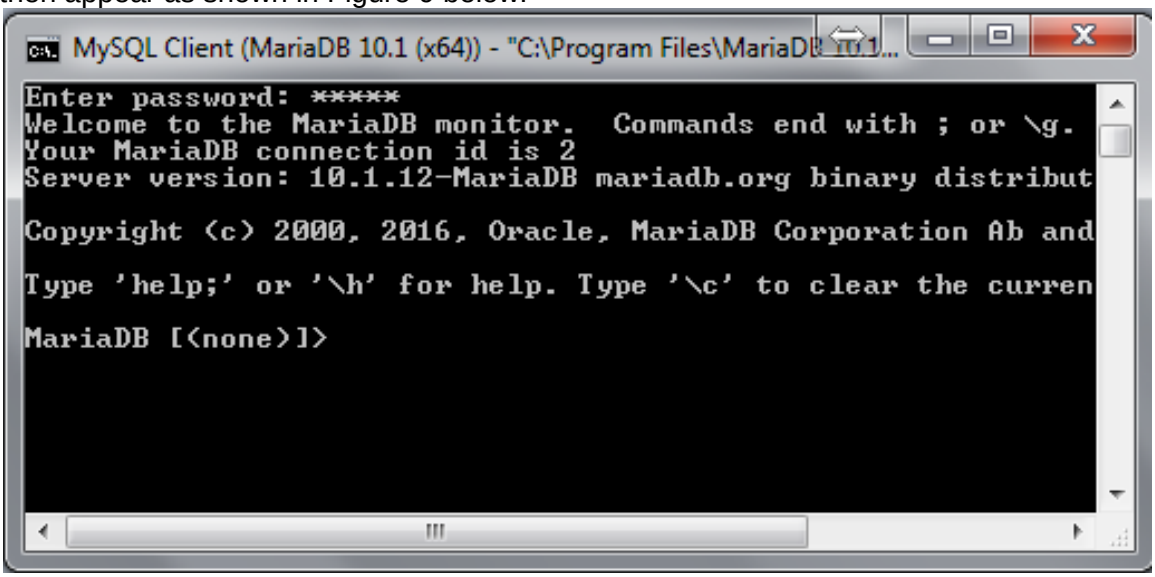


Figure9 - MariaDB Prompt after entering a correct password

Step 4: Run the script:

Assuming the database script file for creating the Climsoft version3 database in MariaDB database server is in the Path **"C:\Backup_Data_SQL".**
To run this script, what you need to do is to type the following command:
"Source C:\Backup_Data_SQL\mysql_main_climsoftT_database_v3.sql" as indicated on the above prompt dialog and validate by pressing the **"Enter Key"** as shown (Figure10) below:

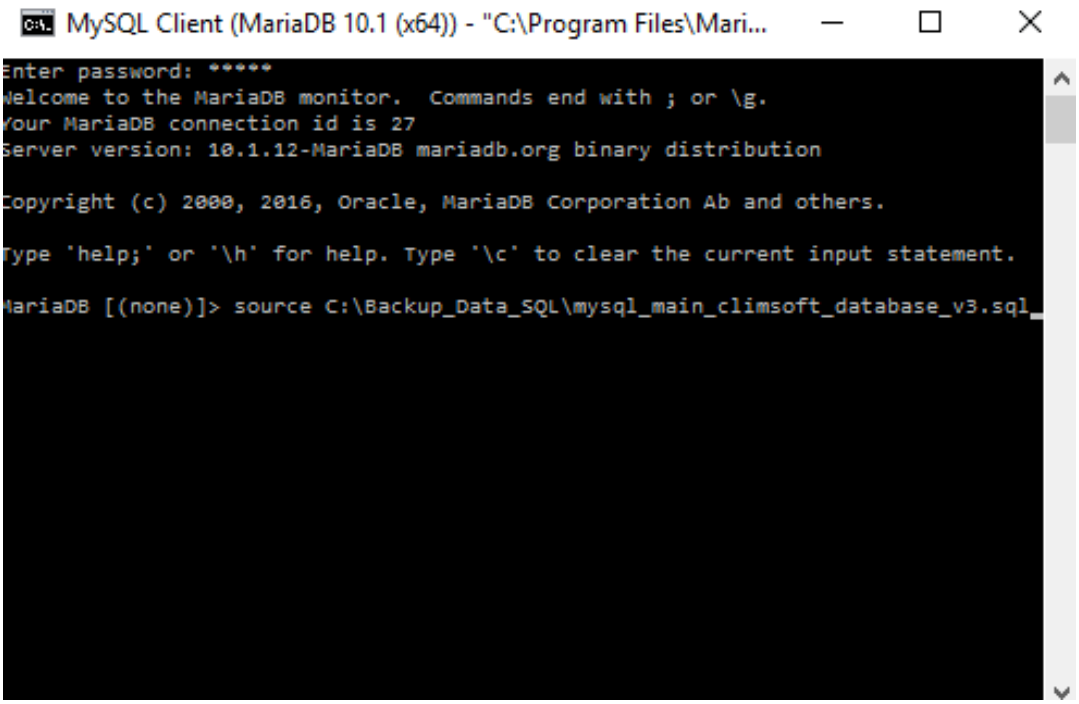


Figure10 - Indicating the computer path where the script file is located

If you have typed the command correctly, the script should run successfully and create the Climsoft V3 database in MariaDB database server. If you wish, you can verify that Climsoft version 3 database has been created successfully by typing the following command on the MariaDB Client Prompt:*"**Show databases;"*** and press the **"Enter Key"**.

Afer creating Climsoft version 3 database in MariaDB database server,the next step is now to migrate data from Climsoft version 3 database to Climsoft version 4 database:

To be able to migrate data from Climsoft version 3 to Climsoft version 4, you have to ensure both database exists in MariaDB database server (i.e.: mysql_main_climsoft_database_v3 and mariadb_climsoft_db_v4). (Figure11);

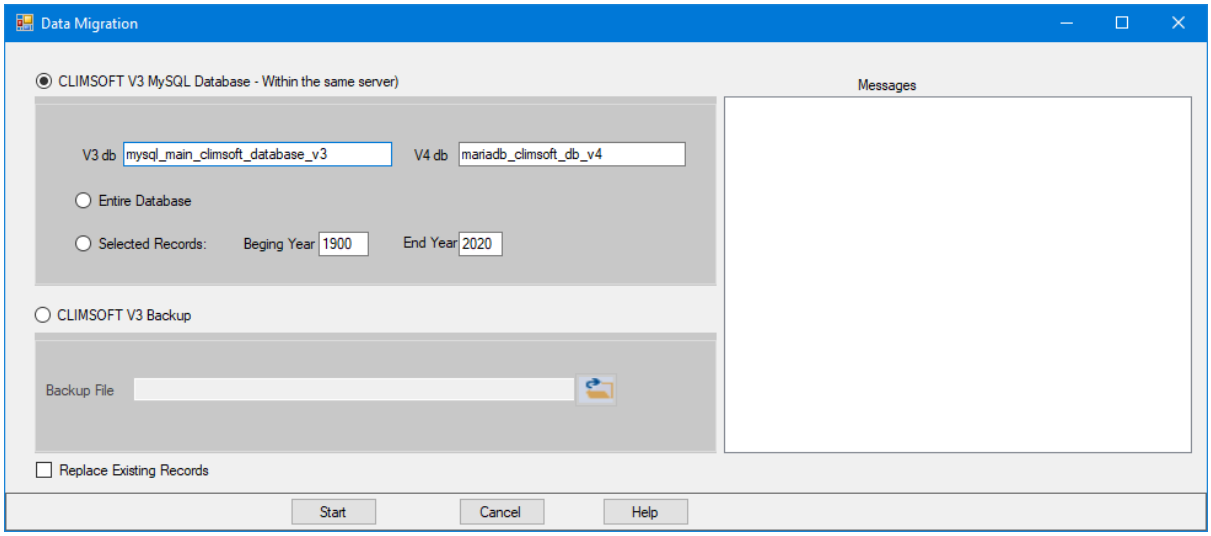


Figure11 – Importing mysql_main_climsoft_v3 into climsoft version 4

The data migration from Climsoft version 3 to Climsoft version 4 will then be carried out in the following steps:

Step1: Ensure the database names for both V3 and V4 are correctly typed in the right boxes;

Step2: Select the option ***Entire Database*** if the entire database is to be migrated;

Step3: Select the option ***Selected Records*** if only a range of data is to be migrated and provide the starting and the ending years appropriately;

Step4: Check the box **Replace Existing Records** if any existing similar records are to be replaced. If Unchecked the duplicate records will be skipped;

Step5: Click **Start** command to start the process;

Step6: Observe any message reported in the message box and address them accordingly.

3.1.2 Importing from Climsoft V3 Backup

Climsoft version 3 backups that are in comma separated values (csv) files are imported through the steps below (Figure12):

Step1: Select the option **CLIMSOFT V3 Backup**;

Step2: Through the explorer button select the text backup file. The file name is then displayed in the box **Backup File** and wait for the messages; ***CLIMSOFT 3 Backup converted to CLIMSOFT 4 Structure***;

Note: It is strongly recommended that the computer login user be the Administrator or members of the administrator to perform this task otherwise ,this user need to be granted the right permission on the **ClimsoftV4** folder and subfolders to be able to perform this task (i.e.: read and write in the **ClimsoftV4** folder .

Step3: Check or uncheck the box **Replace Existing Records** appropriately;

Step4: Click **Start** command to start the process;

Step5: Observe any message reported in the messages box and address them accordingly.

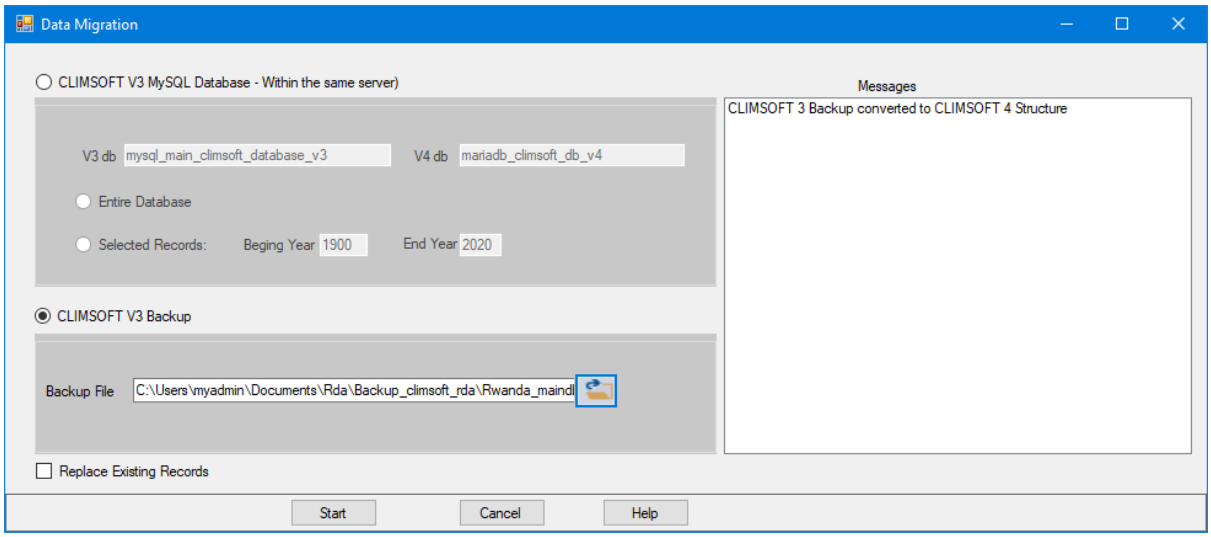
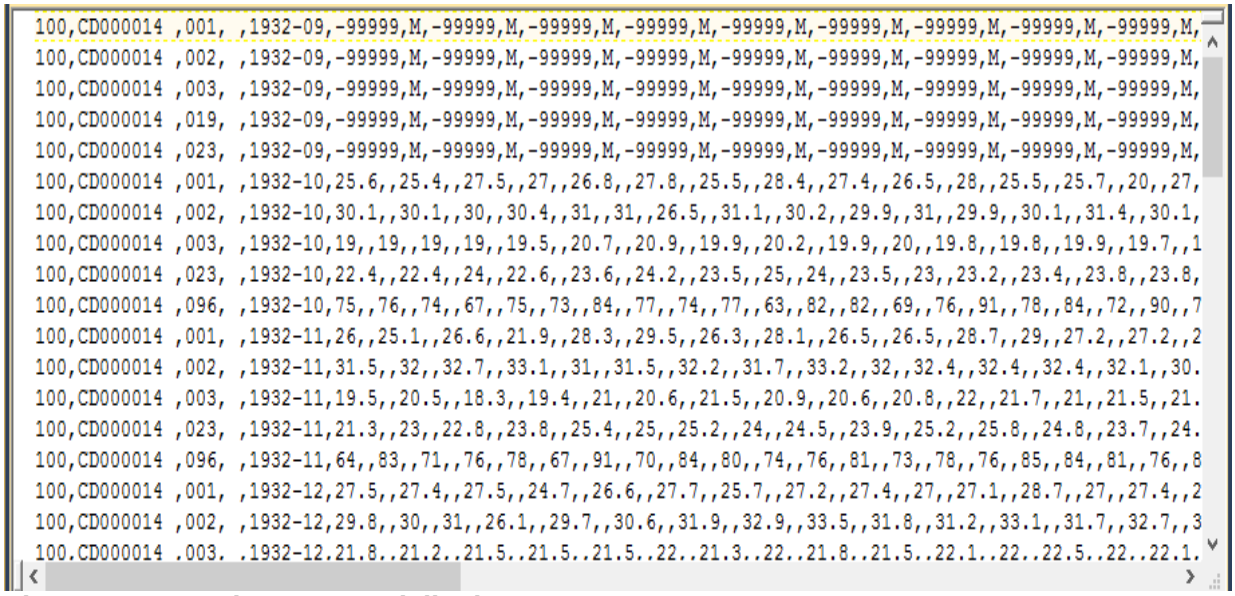


Figure12 - Importing backup csv CLIMSOFT version 3 data into CLIMSOFT version 4

4. Importing CLICOM data

From this operation the 3 CLICOM data formats namely *CLICOM Daily*, *CLICOM Synop* and *CLICOM Hourly* will be imported into Climsoft version 4.

Figure 13 shows a screenshot of sample *CLICOM daily* data. The data format is similar to that for CLIMBASE. Users with data from CLIMBASE can follow the same procedure to import CLIMBASE data into Climsoft.



```
100,CD000014 ,001, ,1932-09,-99999,M,-99999,M,-99999,M,-99999,M,-99999,M,-99999,M,-99999,M,-99999,M,
100,CD000014 ,002, ,1932-09,-99999,M,-99999,M,-99999,M,-99999,M,-99999,M,-99999,M,-99999,M,-99999,M,
100,CD000014 ,003, ,1932-09,-99999,M,-99999,M,-99999,M,-99999,M,-99999,M,-99999,M,-99999,M,-99999,M,
100,CD000014 ,019, ,1932-09,-99999,M,-99999,M,-99999,M,-99999,M,-99999,M,-99999,M,-99999,M,-99999,M,
100,CD000014 ,023, ,1932-09,-99999,M,-99999,M,-99999,M,-99999,M,-99999,M,-99999,M,-99999,M,-99999,M,
100,CD000014 ,001, ,1932-10,25.6,,25.4,,27.5,,27,,26.8,,27.8,,25.5,,28.4,,27.4,,26.5,,28,,25.5,,25.7,,20,,27,
100,CD000014 ,002, ,1932-10,30.1,,30.1,,30,,30.4,,31,,31,,26.5,,31.1,,30.2,,29.9,,31,,29.9,,30.1,,31.4,,30.1,
100,CD000014 ,003, ,1932-10,19,,19,,19,,19,,19.5,,20.7,,20.9,,19.9,,20.2,,19.9,,20,,19.8,,19.8,,19.9,,19.7,,1
100,CD000014 ,023, ,1932-10,22.4,,22.4,,24,,22.6,,23.6,,24.2,,23.5,,25,,24,,23.5,,23,,23.2,,23.4,,23.8,,23.8,
100,CD000014 ,096, ,1932-10,75,,76,,74,,67,,75,,73,,84,,77,,74,,77,,63,,82,,82,,69,,76,,91,,78,,84,,72,,90,,7
100,CD000014 ,001, ,1932-11,26,,25.1,,26.6,,21.9,,28.3,,29.5,,26.3,,28.1,,26.5,,26.5,,28.7,,29,,27.2,,27.2,,2
100,CD000014 ,002, ,1932-11,31.5,,32,,32.7,,33.1,,31,,31.5,,32.2,,31.7,,33.2,,32,,32.4,,32.4,,32.4,,32.1,,30.
100,CD000014 ,003, ,1932-11,19.5,,20.5,,18.3,,19.4,,21,,20.6,,21.5,,20.9,,20.6,,20.8,,22,,21.7,,21,,21.5,,21.
100,CD000014 ,023, ,1932-11,21.3,,23,,22.8,,23.8,,25.4,,25,,25.2,,24,,24.5,,23.9,,25.2,,25.8,,24.8,,23.7,,24.
100,CD000014 ,096, ,1932-11,64,,83,,71,,76,,78,,67,,91,,70,,84,,80,,74,,76,,81,,73,,78,,76,,85,,84,,81,,76,,8
100,CD000014 ,001, ,1932-12,27.5,,27.4,,27.5,,24.7,,26.6,,27.7,,25.7,,27.2,,27.4,,27,,27.1,,28.7,,27,,27.4,,2
100,CD000014 ,002, ,1932-12,29.8,,30,,31,,26.1,,29.7,,30.6,,31.9,,32.9,,33.5,,31.8,,31.2,,33.1,,31.7,,32.7,,3
100,CD000014 ,003, ,1932-12,21.8,,21.2,,21.5,,21.5,,21.5,,22,,21.3,,22,,21.8,,21.5,,22.1,,22,,22.5,,22,,22.1,
```

Figure13 - Sample CLICOM daily data

To import *CLICOM daily* data, click on the "**Data Transfer**" icon on the Climsoft Welcome screen, followed by clicking on the menu items **External Data ->CLICOM >Daily**. This will open the dialog shown in Figure14 below.

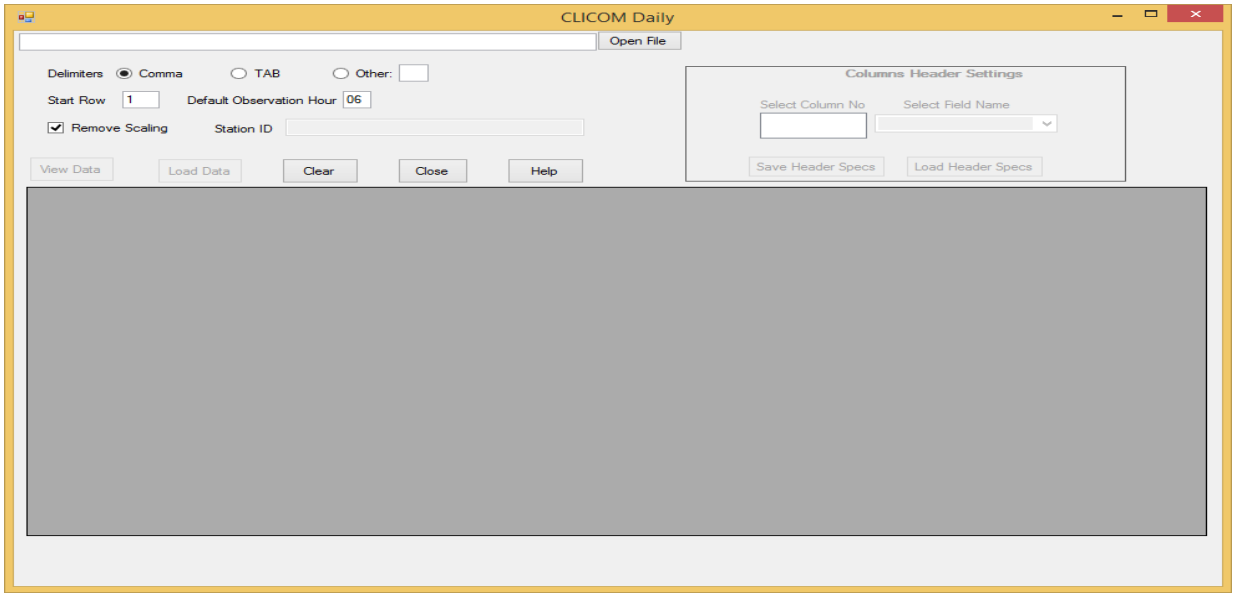


Figure14 - Importing CLICOM daily data

Click "**Open File**" then select the file containing the data and click "**Open"** on the file open dialog. Enter the hour for the daily data observation in the text box "**Default Observation hour**" 06Z has been set as the default. Then from the import dialog click "**View Data**" and the

grid table gets populated with the data. Confirm that it's the right data then click "**Load Data**". Wait for the process shown in Figure15 to complete with a message "***Data import process completed***".

CLICOM Synop and CLICOM Hourly data are similarly imported.

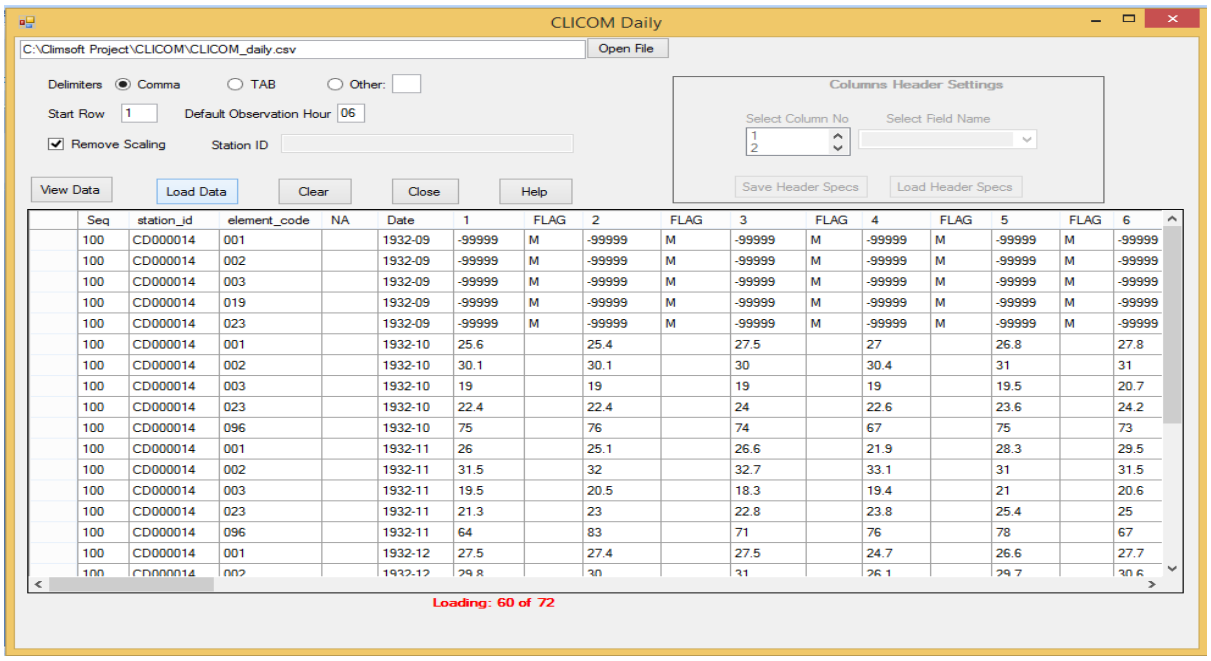


Figure15 - CLICOM daily data import process

Important:

*1. A folder for CLICOM data must be configured under the "**General Settings**". This is used as a working area by the Climsoft application during the process of importing CLICOM data). If the MariaDB server is being accessed over the network from a workstation, it would be ideal to map that folder on the workstation for easy access or viewing from the workstation. However, the data to be imported can be placed in any location that is accessible via the "**Browse**" button.*

*2. Since most data migrated from CLICOM has been noted to have numerous errors, data from CLICOM will be transferred to the "**observationInitial**" table so that the data can be QC'd before being transferred to the "**observationFinal**" table.*

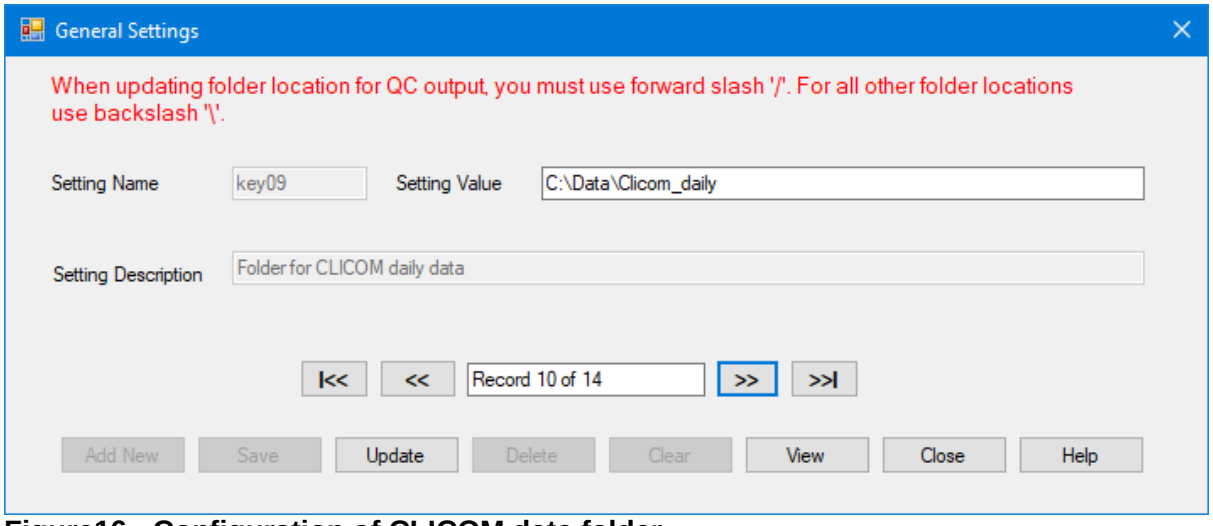
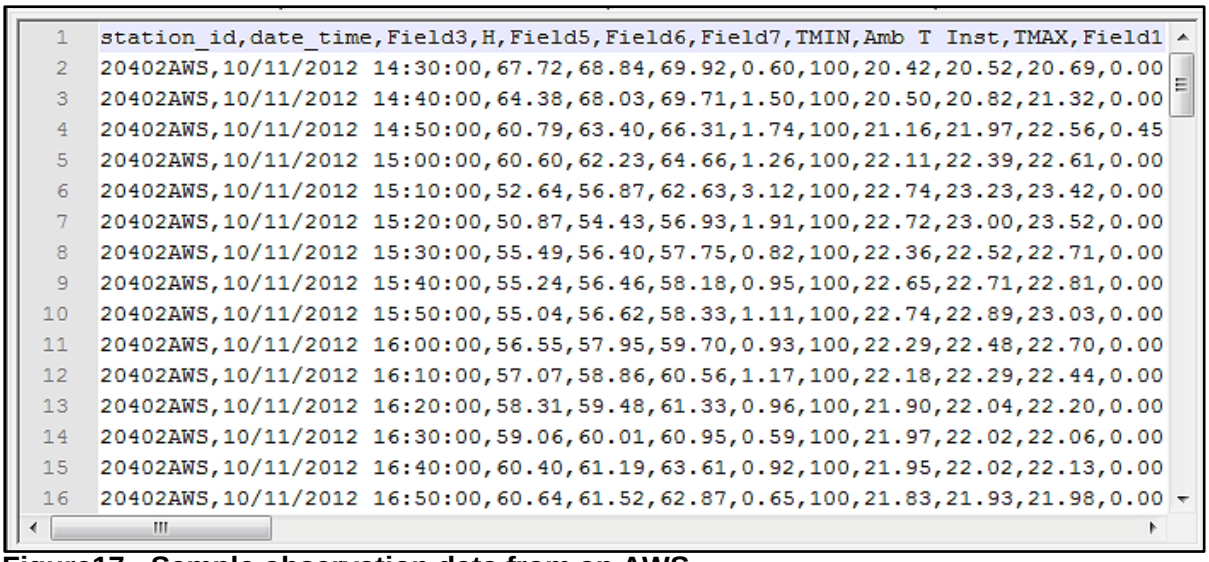


Figure16 - Configuration of CLICOM data folder

5. Importing Automatic Weather Station (AWS) data

Before importing AWS data, it is important to note the structure or format of the AWS data. Many Automatic Weather Stations (AWS) are configured to produce data output files in ASCII format. However, AWS from different suppliers tend to have different observation data outputs depending on the sensors available and configuration of the output. Figure17 shows a screenshot of sample data from an AWS installed in Rwanda. The first row contains the field column) headings representing different meteorological elements. In most cases, not all fields are required for data ingestion into the Climsoft database.



```
1  station_id,date_time,Field3,H,Field5,Field6,Field7,TMIN,Amb T Inst,TMAX,Field1
2  20402AWS,10/11/2012 14:30:00,67.72,68.84,69.92,0.60,100,20.42,20.52,20.69,0.00
3  20402AWS,10/11/2012 14:40:00,64.38,68.03,69.71,1.50,100,20.50,20.82,21.32,0.00
4  20402AWS,10/11/2012 14:50:00,60.79,63.40,66.31,1.74,100,21.16,21.97,22.56,0.45
5  20402AWS,10/11/2012 15:00:00,60.60,62.23,64.66,1.26,100,22.11,22.39,22.61,0.00
6  20402AWS,10/11/2012 15:10:00,52.64,56.87,62.63,3.12,100,22.74,23.23,23.42,0.00
7  20402AWS,10/11/2012 15:20:00,50.87,54.43,56.93,1.91,100,22.72,23.00,23.52,0.00
8  20402AWS,10/11/2012 15:30:00,55.49,56.40,57.75,0.82,100,22.36,22.52,22.71,0.00
9  20402AWS,10/11/2012 15:40:00,55.24,56.46,58.18,0.95,100,22.65,22.71,22.81,0.00
10 20402AWS,10/11/2012 15:50:00,55.04,56.62,58.33,1.11,100,22.74,22.89,23.03,0.00
11 20402AWS,10/11/2012 16:00:00,56.55,57.95,59.70,0.93,100,22.29,22.48,22.70,0.00
12 20402AWS,10/11/2012 16:10:00,57.07,58.86,60.56,1.17,100,22.18,22.29,22.44,0.00
13 20402AWS,10/11/2012 16:20:00,58.31,59.48,61.33,0.96,100,21.90,22.04,22.20,0.00
14 20402AWS,10/11/2012 16:30:00,59.06,60.01,60.95,0.59,100,21.97,22.02,22.06,0.00
15 20402AWS,10/11/2012 16:40:00,60.40,61.19,63.61,0.92,100,21.95,22.02,22.13,0.00
16 20402AWS,10/11/2012 16:50:00,60.64,61.52,62.87,0.65,100,21.83,21.93,21.98,0.00
```

Figure17 - Sample observation data from an AWS

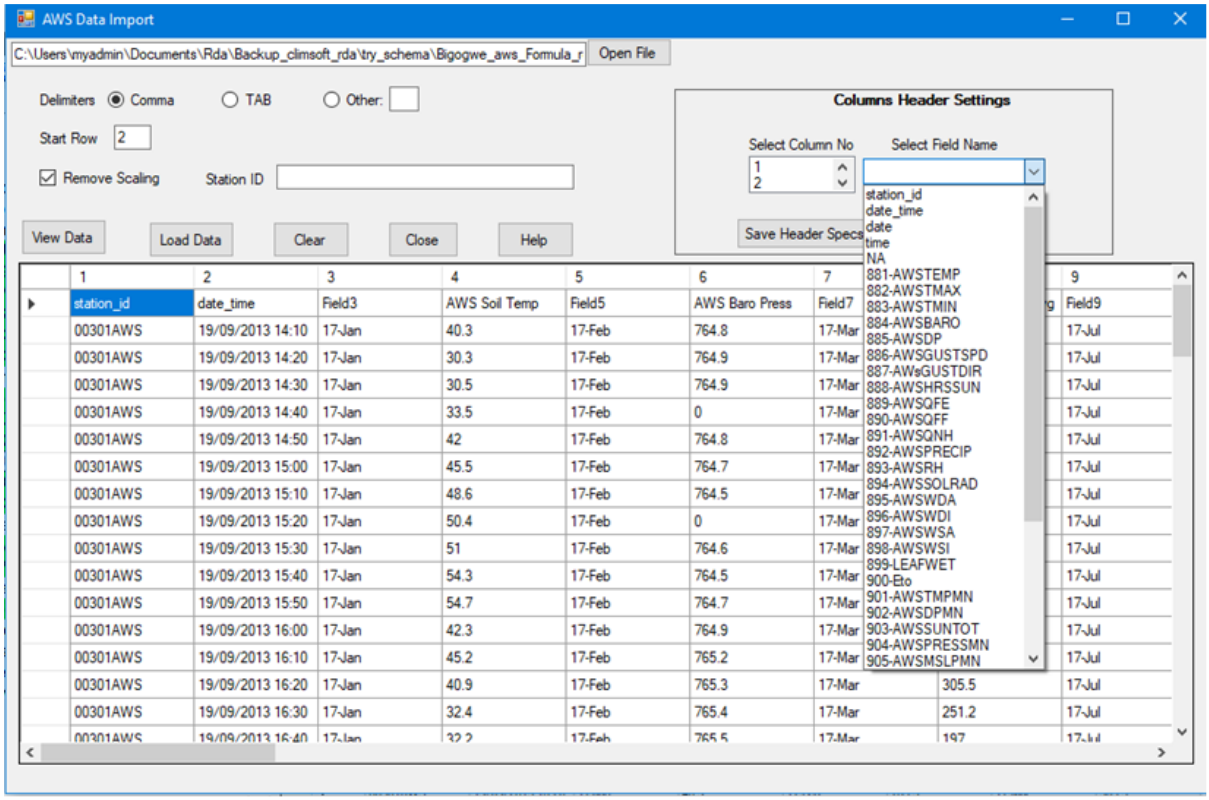
5.1 Selecting the import file and viewing data

Procedures:

(i) Select the "**Data Transfer**" Icon from the main menu welcome dialog;
(ii) Select "**External Data**" from the Database utilities menu;
(iii) Select "**AWS**" to open import dialog as shown in Figure18,
(iv) Click on "**Open File**" to browse for the file to import;
(v) After the file has been located, click "**Open**" in the file open dialog; the filename with its full path will then be shown in the Import File text box. See Figure18;
(vi) Select the "**Delimiter**" option that matches the data separator in the selected file, selecting a wrong delimiter option will result in data *not being properly imported*;
(vii) If some header rows are to be skipped while importing then, enter the row number where importing will start in the "**Start Row"** text box (*Start Row: **2*** is the default i.e. data starts at row 2 and row 1 contains the headers for the data columns);
(viii) "**Remove Scaling**" is checked by default i.e. if the data in the file will be scaled to some decimal points then the decimal point will be removed during the transfer into "observationinitial" table. If the data in the file is not scaled to decimal points then the "*Remove Scaling*" box must be unchecked;
(ix) If all the data belongs to one station and that it does not have a column with station IDs, then type the **ID** for the station in the "**Station ID**" text box.;

After completing above steps click "**View Data**" to populate the grid view with the selected data. **Note that** only the first 25 rows of data from the selected file will be listed in the grid table. This is meant to enable confirmation that the right data has been selected. However, the entire file will be imported if everything is well selected.

Note that the column headers in the grid table will be serialized with numbers from 1 up to the last column of that data.
The following section outlines how to rename the column headers with the element codes for the data they represent.



1	2	3	4	5	6	7	9
station_id	date_time	Field3	AWS Soil Temp	Field5	AWS Baro Press	Field7	Field9
00301AWS	19/09/2013 14:10	17-Jan	40.3	17-Feb	764.8	17-Mar	17-Jul
00301AWS	19/09/2013 14:20	17-Jan	30.3	17-Feb	764.9	17-Mar	17-Jul
00301AWS	19/09/2013 14:30	17-Jan	30.5	17-Feb	764.9	17-Mar	17-Jul
00301AWS	19/09/2013 14:40	17-Jan	33.5	17-Feb	0	17-Mar	17-Jul
00301AWS	19/09/2013 14:50	17-Jan	42	17-Feb	764.8	17-Mar	17-Jul
00301AWS	19/09/2013 15:00	17-Jan	45.5	17-Feb	764.7	17-Mar	17-Jul
00301AWS	19/09/2013 15:10	17-Jan	48.6	17-Feb	764.5	17-Mar	17-Jul
00301AWS	19/09/2013 15:20	17-Jan	50.4	17-Feb	0	17-Mar	17-Jul
00301AWS	19/09/2013 15:30	17-Jan	51	17-Feb	764.6	17-Mar	17-Jul
00301AWS	19/09/2013 15:40	17-Jan	54.3	17-Feb	764.5	17-Mar	17-Jul
00301AWS	19/09/2013 15:50	17-Jan	54.7	17-Feb	764.7	17-Mar	17-Jul
00301AWS	19/09/2013 16:00	17-Jan	42.3	17-Feb	764.9	17-Mar	17-Jul
00301AWS	19/09/2013 16:10	17-Jan	45.2	17-Feb	765.2	17-Mar	17-Jul
00301AWS	19/09/2013 16:20	17-Jan	40.9	17-Feb	765.3	17-Mar	305.5 17-Jul
00301AWS	19/09/2013 16:30	17-Jan	32.4	17-Feb	765.4	17-Mar	251.2 17-Jul
00301AWS	19/09/2013 16:40	17-Jan	32.2	17-Feb	765.5	17-Mar	197 17-Jul

Figure18 - AWS Data Import Dialog

5.2 Configuring column headers and uploading data into Climsoft database

(i) Under "**Columns Header Settings**" (see Figure 18 above), select the *column number* and click on the appropriate **Field Name** from the two boxes therein respectively. Do that for each column until all of them are done. Make sure the correct field names are selected in order for the data to be appropriately mapped in the database. If any column contains data that will not be imported it should be labeled "**NA**",

(ii) If the step (i) above is correctively completed then configured header specifications can be saved in a text file to be used later for a similar file without going through that process again. To save the specifications click "**Save Header Specs**" button and choose a convenient location and file. Note that the file will automatically be allocated file extension of ***sch*** e.g. *aws1.csh*;

(iii) If the header specs had been saved earlier click "**Load Header Specs**" and select the header specs file. If correctly selected the columns in the displayed data table will be automatically labeled with the header specs.

If satisfied that the columns are correctly named click "**Load Data"** to start the uploading process. Wait until the busy mouse pointer changes to default. A message will be displaying at the bottom of the dialog in red showing the data transfer progress.
It should be noted that the **Station IDs** and **Element Codes** used must described in the metadata. If not data described by them will not be imported. Station IDs and Element Codes not found in metadata will be listed at the bottom of the dialog.

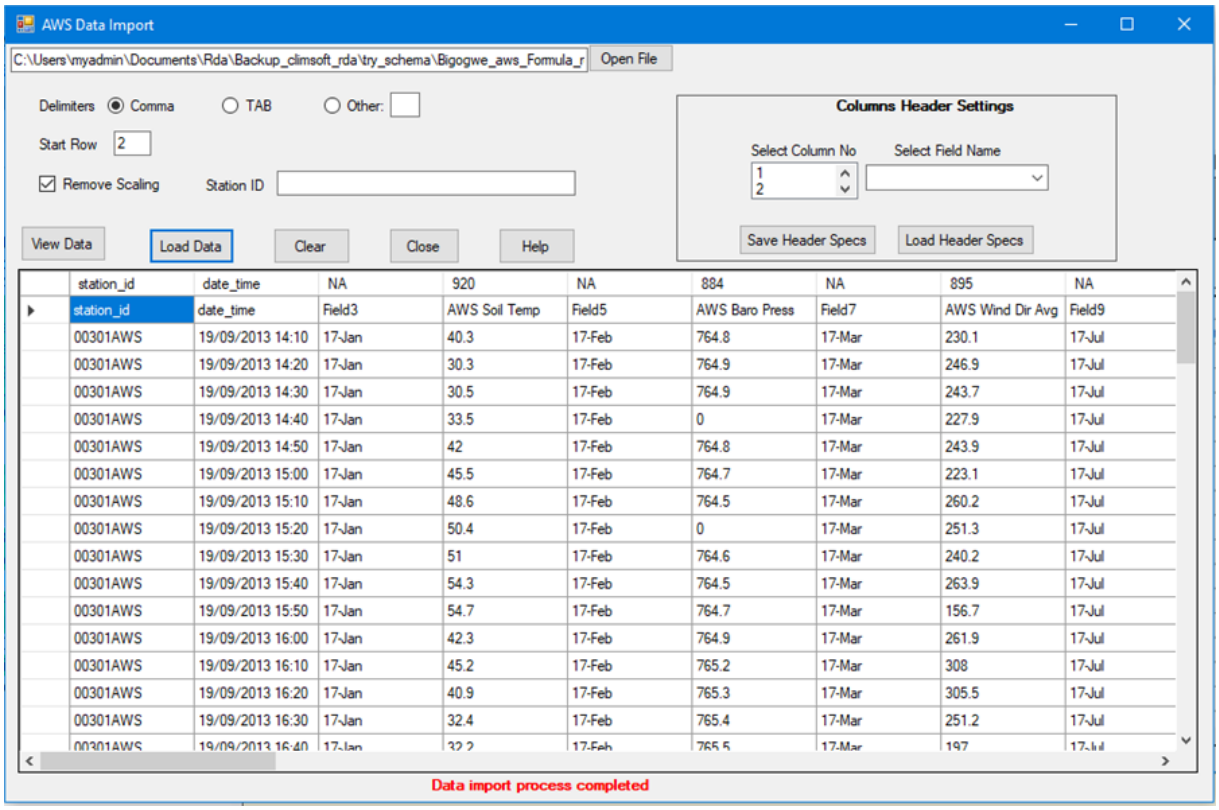


Figure19 - Configuration of column headers

Important

*1. A folder for AWS data must be configured under the "**General Settings**". (Figure20). This is used as a working area by the Climsoft application during the process of importing AWS data. That folder must be on the computer where the MariaDB is running from. If the MariaDB server is being accessed over the network from a workstation, it would be ideal to map that folder on the workstation for easy access or viewing from the workstation. However, data to be imported can be placed in any location that is accessible via the "**Browse**" button*

*2. Data from AWS will be transferred into the "**observationFinal**" table.*

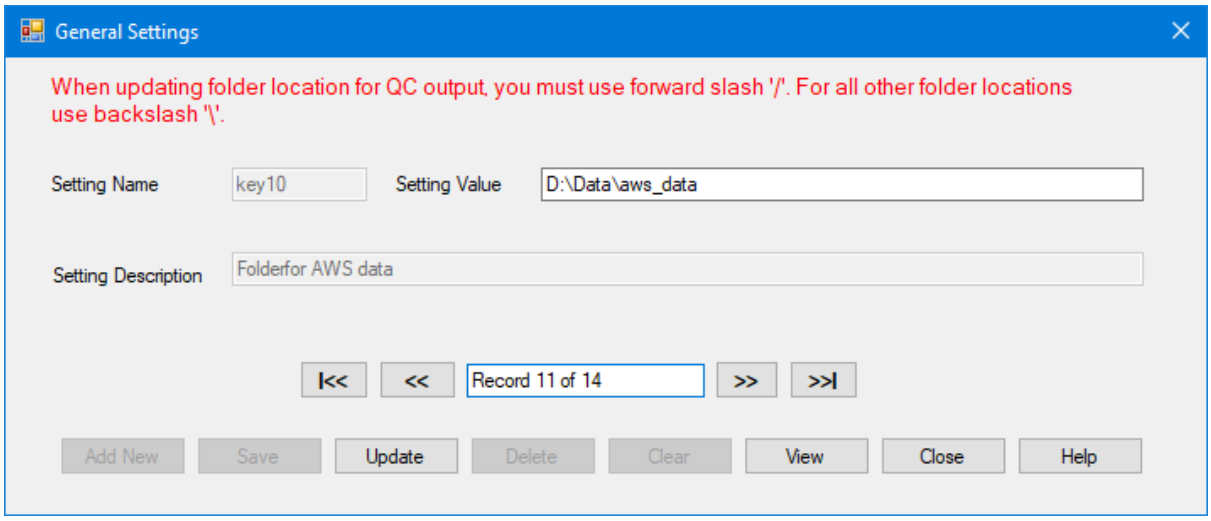


Figure20 - AWS data Configuration

6. Importing Text Files Data of Different Structures

6.1 Hourly and Daily Data Import

Daily/Hourly data values arranged in one or many columns can be ingested easily into Climsoft version 4. Data should be saved in delimited text files. Figure21 and 22 are sample data files with data organized in different structures:

	A	B	C	D	E	F	G	H
1	StationId	Element_(	Year	Month	Day	Hour	Rain	
2	10101100	5	1981	1	1	6	0	
3	10101100	5	1981	1	2	6	8.8	
4	10101100	5	1981	1	3	6	1.1	
5	10101100	5	1981	1	4	6	0.6	
6	10101100	5	1981	1	5	6	0	
7	10101100	5	1981	1	6	6	11.1	
8	10101100	5	1981	1	7	6	0	
9	10101100	5	1981	1	8	6	0	
10	10101100	5	1981	1	9	6	0	

Figure21 - Sample file with data in one column

A16 | 10101100

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	station_id	element	Year	Month	1	2	3	4	5	6	7	8	9
2	10101100	5	1930	10	0	0	24	9.1	9.6	12.1	1	12.9	0
3	10101100	5	1930	11	14.5	1	0	5.7	11.4	3	4	0	1
4	10101100	5	1930	12	0	0	7	6.5	7.5	7.5	0	3	0
5	10101100	5	1931	1	0	0	0	0	0	0	0	0	0
6	10101100	5	1931	2	19	0	2.4	0	0	0	0	0	0
7	10101100	5	1931	3	0	0	0	9.4	0	7.8	0	0	0
8	10101100	5	1931	4	0	6.8	0	11.4	0	1.3	0	0	1.4
9	10101100	5	1931	5	10.9	2.1	2	1.5	3	10.5	9	4.5	2.5
10	10101100	5	1931	6	0	0	0	12.2	0	0	0	0	0
11	10101100	5	1931	7	0	0	0	3.4	0	0	0.7	0	0
12	10101100	5	1931	8	0	0	0	0	0	11.5	0	0	0
13	10101100	5	1931	9	0	0	11.1	0	0	0	0	0	1.2
14	10101100	5	1931	10	0	0	0	1.4	8.4	0	4.2	0	0
15	10101100	5	1931	11	0	0	0	4.5	0	0	0	12.2	0
16	10101100	5	1931	12	8.6	7.8	5.2	9.1	4	22.3	35.4	2.4	0

Figure22 - Sample file with data in many columns

Follow the steps below to transfer Hourly/Daily data with one or many columns structure into Climsoft version 4:

(i) Select "**Data transfer**" icon from the welcome main menu dialog,
(ii) Select "**External Data**" and select "**Text Files**" and then "**Hourly or Daily**" option, Figure 23,

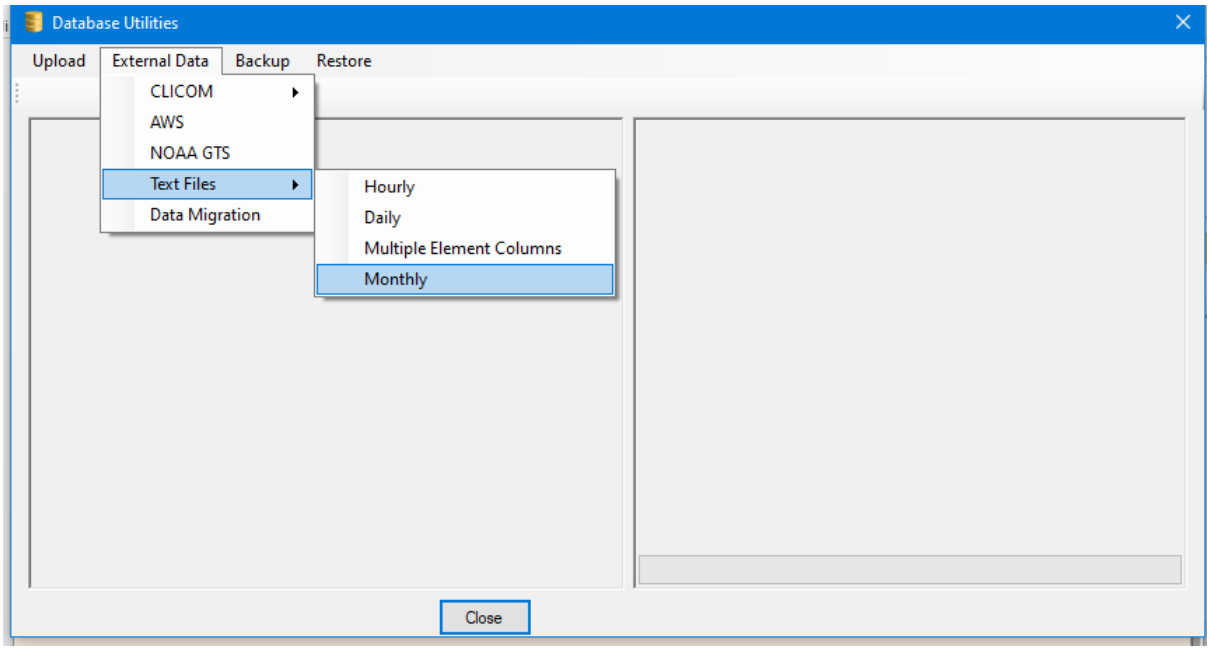
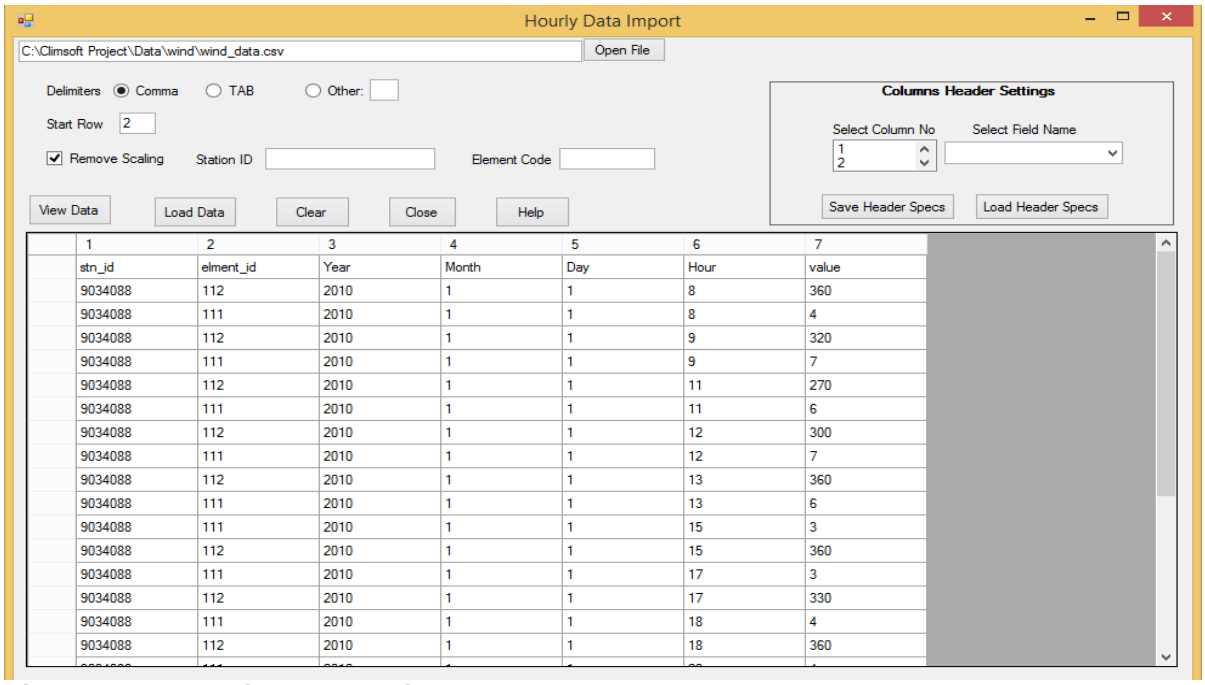


Figure23 - Importing External Data Dialog

(iii) After selecting "**Hourly or Daily**" option, the dialog in *Figure 60* displays. Click on "**Open File**" to browse and select the file containing data to transfer, specify the "**delimiter**" of the file to import (e.g. comma (default), TAB, Others), tick/untick the "**remove scaling**" box appropriately to ensure data will be imported into "*observationinitial*" table without the decimal points and then select "**View Data**" to view the file in data sheet view (tabular form),

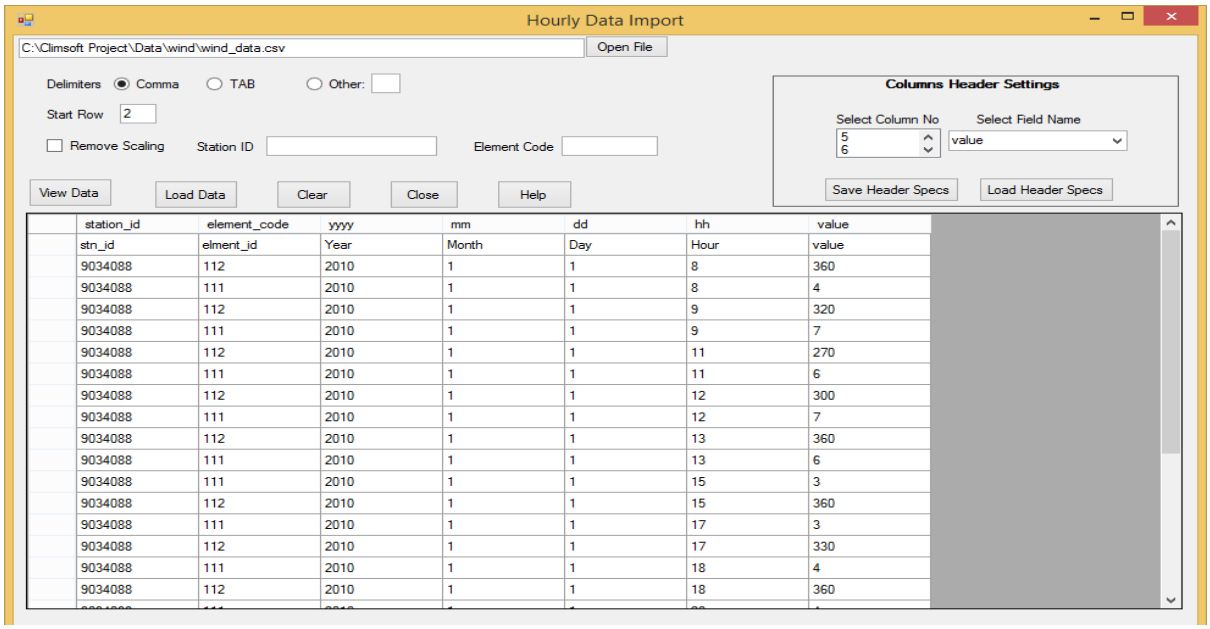
(iv) Set the Columns Header by matching each data column by its corresponding field name,



1	2	3	4	5	6	7
stn_id	elment_id	Year	Month	Day	Hour	value
9034088	112	2010	1	1	8	360
9034088	111	2010	1	1	8	4
9034088	112	2010	1	1	9	320
9034088	111	2010	1	1	9	7
9034088	112	2010	1	1	11	270
9034088	111	2010	1	1	11	6
9034088	112	2010	1	1	12	300
9034088	111	2010	1	1	12	7
9034088	112	2010	1	1	13	360
9034088	111	2010	1	1	13	6
9034088	111	2010	1	1	15	3
9034088	112	2010	1	1	15	360
9034088	111	2010	1	1	17	3
9034088	112	2010	1	1	17	330
9034088	111	2010	1	1	18	4
9034088	112	2010	1	1	18	360

Figure24 - Importing External Data

(v) After finishing the matching you will have the dialog shown in Figure 25.



station_id	element_code	yyyy	mm	dd	hh	value
stn_id	elment_id	Year	Month	Day	Hour	value
9034088	112	2010	1	1	8	360
9034088	111	2010	1	1	8	4
9034088	112	2010	1	1	9	320
9034088	111	2010	1	1	9	7
9034088	112	2010	1	1	11	270
9034088	111	2010	1	1	11	6
9034088	112	2010	1	1	12	300
9034088	111	2010	1	1	12	7
9034088	112	2010	1	1	13	360
9034088	111	2010	1	1	13	6
9034088	111	2010	1	1	15	3
9034088	112	2010	1	1	15	360
9034088	111	2010	1	1	17	3
9034088	112	2010	1	1	17	330
9034088	111	2010	1	1	18	4
9034088	112	2010	1	1	18	360

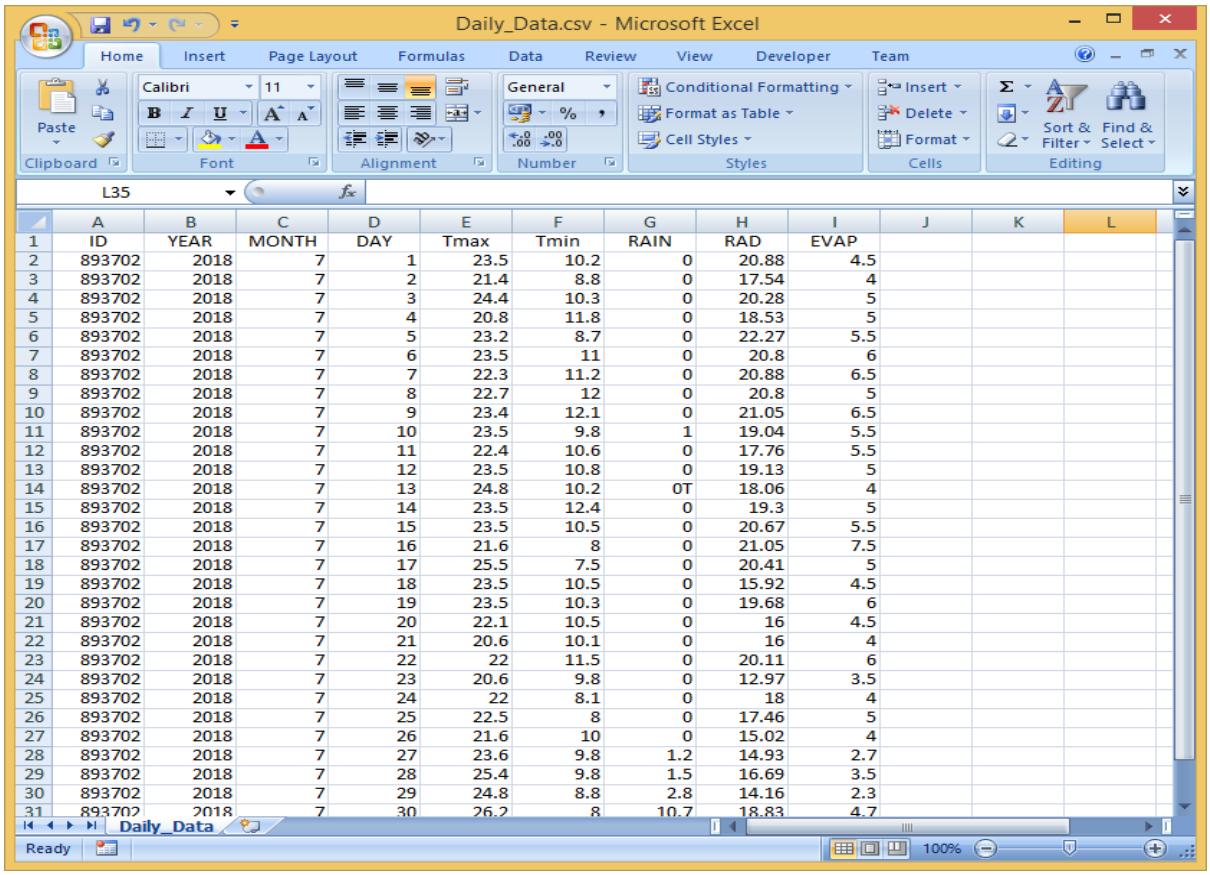
Figure25 - Columns Header Settings

(vi) Click the "**Load Data**" button to load the data into the "***observationinitial***" table and observe the records uploading count and the process completion message at the bottom of the dialog. In case the upload fails a message will pop up accordingly

Note: *To avoid setting the columns headers each time you load new data, save the columns header specifications by selecting the "**Save Header Specs**" button. Note the file extension (e.g. header1_specs.sch). To retrieve and use the saved columns headers select the " **Load Header Specs**" button and navigate to select the appropriate file.*

6.2 Multiple Element Columns

Figure26 shows a text (csv) file (opened in Excel) with the columns for *StationID*, *Year*, *Month, Day* and 5 columns with values of different Elements (i.e. Tmax, Tmin, RAIN, RAD and EVAP). This file can be easily imported into Climsoft version 4 through the procedure described below:



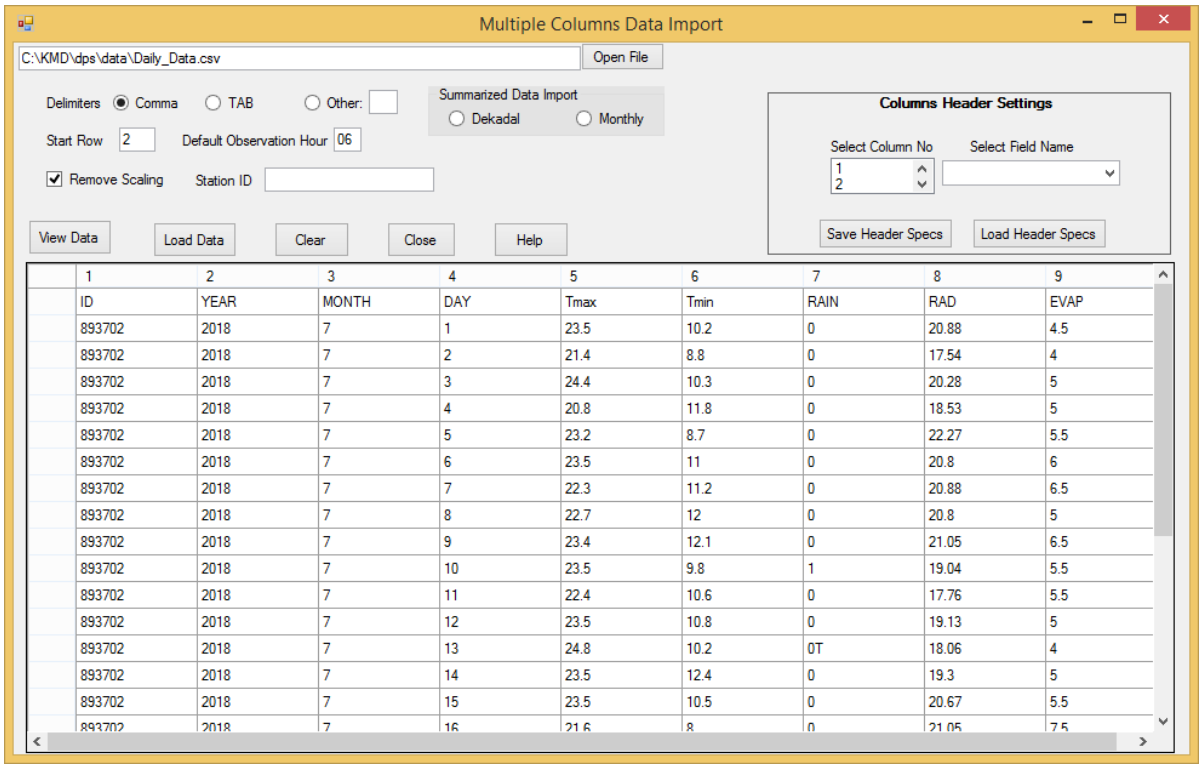
	A	B	C	D	E	F	G	H	I	J	K	L
1	ID	YEAR	MONTH	DAY	Tmax	Tmin	RAIN	RAD	EVAP			
2	893702	2018	7	1	23.5	10.2	0	20.88	4.5			
3	893702	2018	7	2	21.4	8.8	0	17.54	4			
4	893702	2018	7	3	24.4	10.3	0	20.28	5			
5	893702	2018	7	4	20.8	11.8	0	18.53	5			
6	893702	2018	7	5	23.2	8.7	0	22.27	5.5			
7	893702	2018	7	6	23.5	11	0	20.8	6			
8	893702	2018	7	7	22.3	11.2	0	20.88	6.5			
9	893702	2018	7	8	22.7	12	0	20.8	5			
10	893702	2018	7	9	23.4	12.1	0	21.05	6.5			
11	893702	2018	7	10	23.5	9.8	1	19.04	5.5			
12	893702	2018	7	11	22.4	10.6	0	17.76	5.5			
13	893702	2018	7	12	23.5	10.8	0	19.13	5			
14	893702	2018	7	13	24.8	10.2	0T	18.06	4			
15	893702	2018	7	14	23.5	12.4	0	19.3	5			
16	893702	2018	7	15	23.5	10.5	0	20.67	5.5			
17	893702	2018	7	16	21.6	8	0	21.05	7.5			
18	893702	2018	7	17	25.5	7.5	0	20.41	5			
19	893702	2018	7	18	23.5	10.5	0	15.92	4.5			
20	893702	2018	7	19	23.5	10.3	0	19.68	6			
21	893702	2018	7	20	22.1	10.5	0	16	4.5			
22	893702	2018	7	21	20.6	10.1	0	16	4			
23	893702	2018	7	22	22	11.5	0	20.11	6			
24	893702	2018	7	23	20.6	9.8	0	12.97	3.5			
25	893702	2018	7	24	22	8.1	0	18	4			
26	893702	2018	7	25	22.5	8	0	17.46	5			
27	893702	2018	7	26	21.6	10	0	15.02	4			
28	893702	2018	7	27	23.6	9.8	1.2	14.93	2.7			
29	893702	2018	7	28	25.4	9.8	1.5	16.69	3.5			
30	893702	2018	7	29	24.8	8.8	2.8	14.16	2.3			
31	893702	2018	7	30	26.2	8	10.7	18.83	4.7			

Figure26 - Sample data with multiple columns

The procedure to import this file is as follows:

a) Selecting the import file and viewing the data

(i) Select the "**Data transfer**" icon from the welcome dialog,
(ii) Select "**External Data**", then "**Text Files**" and then the "**Multiple Element Columns**" option (see *Figure27*),
(iii) Select **Open File** to browse the file to import,
(iv) After the file has been located, click **Open** in the file open dialog; the filename with its full path will be shown in the "**Import File box"**. See *Figure27*,
(v) Select the **Delimiter** option according to the data separator for the selected file (comma, tab or others).
(vi) If some rows are to be skipped while importing e.g. column headers enter the row number where importing will start in the "**Start Row"** box. Row 2 is the default,
(vii) If the data does not contain the observation hour column, fill the "**Default Observation Hour**" box by entering the daily observation hour. The value 06 has been set as default as it is the case with most parameters,
(viii) If the data in the file is scaled to some decimal point, then check the box **Remove Scaling**,
(ix) When all the above steps have been completed click **View Data**. The table in the dialog is then populated with the data from the selected file. The column header will be serialised with numbers from 1 up to the last column of that data, as shown in *Figure27*.



1	2	3	4	5	6	7	8	9
ID	YEAR	MONTH	DAY	Tmax	Tmin	RAIN	RAD	EVAP
893702	2018	7	1	23.5	10.2	0	20.88	4.5
893702	2018	7	2	21.4	8.8	0	17.54	4
893702	2018	7	3	24.4	10.3	0	20.28	5
893702	2018	7	4	20.8	11.8	0	18.53	5
893702	2018	7	5	23.2	8.7	0	22.27	5.5
893702	2018	7	6	23.5	11	0	20.8	6
893702	2018	7	7	22.3	11.2	0	20.88	6.5
893702	2018	7	8	22.7	12	0	20.8	5
893702	2018	7	9	23.4	12.1	0	21.05	6.5
893702	2018	7	10	23.5	9.8	1	19.04	5.5
893702	2018	7	11	22.4	10.6	0	17.76	5.5
893702	2018	7	12	23.5	10.8	0	19.13	5
893702	2018	7	13	24.8	10.2	0T	18.06	4
893702	2018	7	14	23.5	12.4	0	19.3	5
893702	2018	7	15	23.5	10.5	0	20.67	5.5
893702	2018	7	16	21.6	8	0	21.05	7.5

Figure27 - Multiple column data Import

b) Configuring column headers and upload data to the Climsoft database

(i) Under "**Columns Header Settings",** select the column number and click on the appropriate field name from the two boxes respectively. For the data columns the selected field name should be the element code for the data under that column. Repeat for each column. Make sure the correct field names are selected for the data to be appropriately mapped in the database,

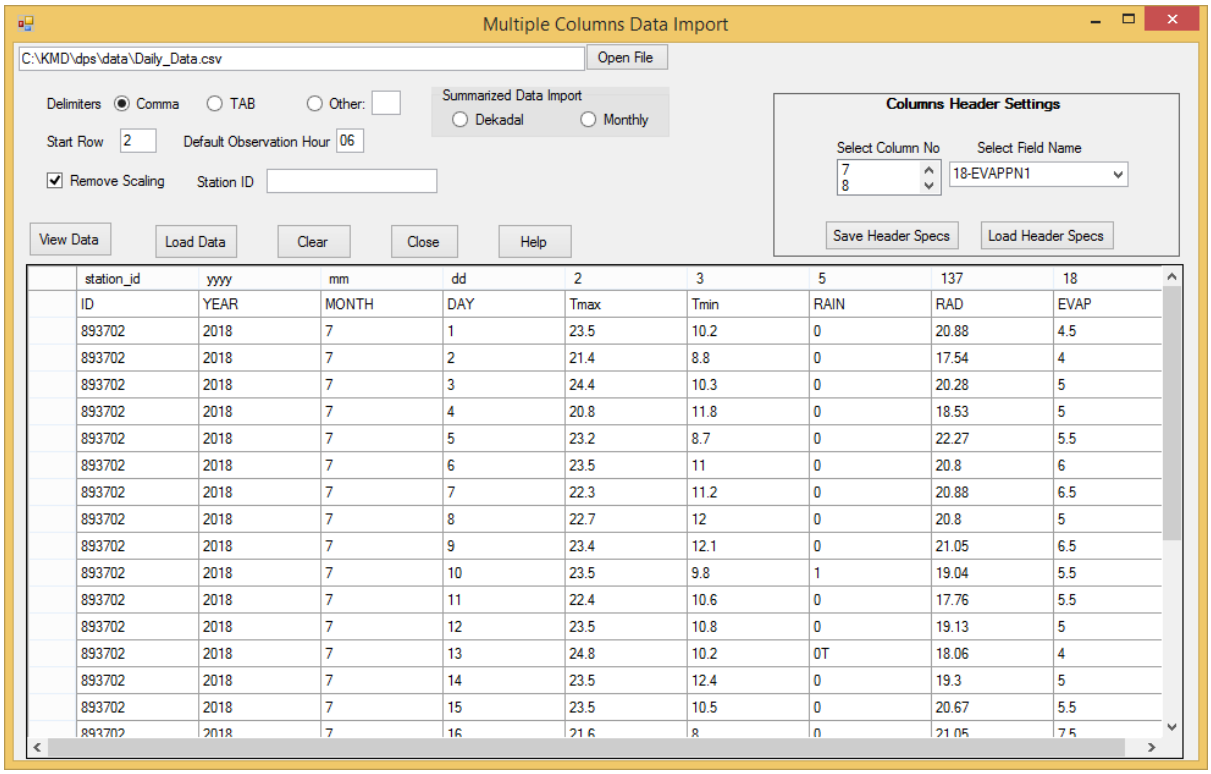
(ii) Once step (i) is completed the created header specifications can be saved in a text file to be used later for a similar file without going through the same process again. To save the header specifications click "**Save Header Specs"** and choose a convenient location and file,

(iii) If the header specs had earlier been saved in a file then click "**Load Header Specs"** and select the folder that contains that file. If correctly specified, the columns in the displayed data table are labelled automatically as shown in *Figure28*,

(iv) Once the columns are correctly named click "**Load Data"** to start the uploading process. Wait until the busy mouse pointer changes to the default. A message is then displaying at the bottom of the dialog in red showing the data transfer progress.

More details on the Command Buttons for the data import dialog are as follows:

Save Header Specs - Click Save Header Specs to save the header specification as a file for future use;
Load Header Specs - Click on Load header Specs to load the saved header specification into your data to avoid typing the headers each time;
View Data - Click View Data to view the data in a table view;
Load Data - Click Load Data to start the uploading process;
Clear - Click Clear to remove all the data from the table;
Close - Click Close to close the dialog;
Help - Click Help to get more information on the dialog;



station_id	yyyy	mm	dd	2	3	5	137	18
ID	YEAR	MONTH	DAY	Tmax	Tmin	RAIN	RAD	EVAP
893702	2018	7	1	23.5	10.2	0	20.88	4.5
893702	2018	7	2	21.4	8.8	0	17.54	4
893702	2018	7	3	24.4	10.3	0	20.28	5
893702	2018	7	4	20.8	11.8	0	18.53	5
893702	2018	7	5	23.2	8.7	0	22.27	5.5
893702	2018	7	6	23.5	11	0	20.8	6
893702	2018	7	7	22.3	11.2	0	20.88	6.5
893702	2018	7	8	22.7	12	0	20.8	5
893702	2018	7	9	23.4	12.1	0	21.05	6.5
893702	2018	7	10	23.5	9.8	1	19.04	5.5
893702	2018	7	11	22.4	10.6	0	17.76	5.5
893702	2018	7	12	23.5	10.8	0	19.13	5
893702	2018	7	13	24.8	10.2	0T	18.06	4
893702	2018	7	14	23.5	12.4	0	19.3	5
893702	2018	7	15	23.5	10.5	0	20.67	5.5
893702	2018	7	16	21.6	8	0	21.05	7.5

Figure28 - Multiple column data Import with column headers specification

6.3 Importing Summarized Data

Data that is summarized on Dekadal or monthly basis can be imported into Climsoft. In practice this is done when the raw data for those summaries is not available. Otherwise it is advisable to import the actual observations because Climsoft is capable of producing those summaries whenever required.

After importing summarized values will be placed in the appropriate day of the month and be allocated a period value that is equivalent to the number of days used in the summary. For instance monthly summary values will be placed on the last day of the month and the period value will be number of days in that month.

Following are examples of the summarized data with layouts:

StationID	Year	Month	DEKAD	TMIN	TMAX	PRECIP
9136130	1984	1	1	13	25.1	0.8
9136130	1984	1	2	13.5	26.1	0.0
9136130	1984	1	3	13.2	26.7	0.0
9136130	1984	2	1	13	27.5	0.0
9136130	1984	2	2	11.7	28.5	0.0
9136130	1984	2	3	13.8	27.8	0.2
9136130	1984	3	1	13.4	27.5	0.1
9136130	1984	3	2	15.2	27.7	0.3
9136130	1984	3	3	15.4	27.4	0.2
9136130	1984	4	1	16	28.4	0.9
9136130	1984	4	2	16	26.9	2.1
9136130	1984	4	3	15.3	25.9	5.8
9136130	1984	5	1	14.4	25.9	0.0
9136130	1984	5	2	14.1	25.7	0.1
9136130	1984	5	3	13.5	25.6	0.0
9136130	1984	6	1	12.4	24.6	0.4
9136130	1984	6	2	12.4	24.4	0.1
9136130	1984	6	3	12	24.5	0.0
9136130	1984	7	1	12.2	23.2	0.0
9136130	1984	7	2	12.3	22.5	0.8
9136130	1984	7	3	13	21.2	0.5
9136130	1984	8	1	11.6	21.3	1.3
9136130	1984	8	2	11.9	21.9	0.0

Figure 29a Dekadal – Multiple Elements columns

StationID	Code	Year	Month	1	2	3
9136130	3	1984	1	25.1	26.1	26.7
9136130	3	1984	2	27.5	28.5	27.8
9136130	3	1984	3	27.5	27.7	27.4
9136130	3	1984	4	28.4	26.9	25.9
9136130	3	1984	5	25.9	25.7	25.6
9136130	3	1984	6	24.6	24.4	24.5
9136130	3	1984	7	23.2	22.5	21.2
9136130	3	1984	8	21.3	21.9	24.7
9136130	3	1984	9	26.3	25.9	26.5
9136130	3	1984	10	23.7	25.5	22.8
9136130	3	1984	11	22.5	23.4	23.2
9136130	3	1984	12	25	22.8	23.7
9136130	3	1984	1	13	13.5	13.2
9136130	3	1984	2	13	11.7	13.8
9136130	3	1984	3	13.4	15.2	15.4
9136130	3	1984	4	16	16	15.3
9136130	3	1984	5	14.4	14.1	13.5
9136130	3	1984	6	12.4	12.4	12
9136130	3	1984	7	12.2	12.3	13
9136130	3	1984	8	11.6	11.9	12.2
9136130	3	1984	9	11.8	13.2	13.1
9136130	3	1984	10	14.8	13.6	14.7

Figure 29b Dekadal – Single Elements column

StationID	Year	Month	PRECIP
9136130	1984	1	0.76
9136130	1984	2	0.16
9136130	1984	3	0.53
9136130	1984	4	8.73
9136130	1984	5	0.16
9136130	1984	6	0.5
9136130	1984	7	1.28
9136130	1984	8	2.24
9136130	1984	9	1.39
9136130	1984	10	14.48
9136130	1984	11	12.39
9136130	1984	12	8.56

Figure 29c Monthly – Multiple Elements columns

StationID	Code	Year	1	2	3	4	5	6	7	8	9	10	11	12
9136130	5	1981	0.37	0.2	10.63	32.34	14.49	3.07	0.96	3.04	4.39	4.17	4.02	5.99
9136130	5	1982	0.24	1.41	3.12	19.29	16.44	0.84	1.35	0.31	1.59	18.64	22.01	18.89
9136130	5	1983	0.18	12.8	4.34	13.71	3.8	3.1	2.25	2.98	0.36	6.36	2.24	22.57
9136130	5	1984	0.76	0.16	0.53	8.73	0.16	0.5	1.28	2.24	1.39	14.48	12.39	8.56
9136130	5	1985	0	9.12	8.8	18.88	5.97	3.24	5.02	0.31	2.25	2.06	6.75	10.5

Figure 29d Monthly– Single Elements column

The import procedures will differ with the layout of the summarized data as follows:

a. Data in multiple Elements Columns - **Figure 29a** and **29c**

From **Welcome** dialog follow:
Data Transfer -> External Data ->Text File->Multiple Element Columns. Then check option **Dekadal** or **Monthly** for type of ***Figure 29a*** or ***29c*** respectively.

b. Dekadal data in single Elements Column - **Figure 29b**

From **Welcome** dialog follow:
Data Transfer -> External Data ->Text File->Daily. Then check option **Dekadal.**

c. Monthly data in single Elements Column - **Figure 29d**

From **Welcome** dialog follow:
Data Transfer -> External Data ->Text File->Monthly.

Notes on Daily Data Import

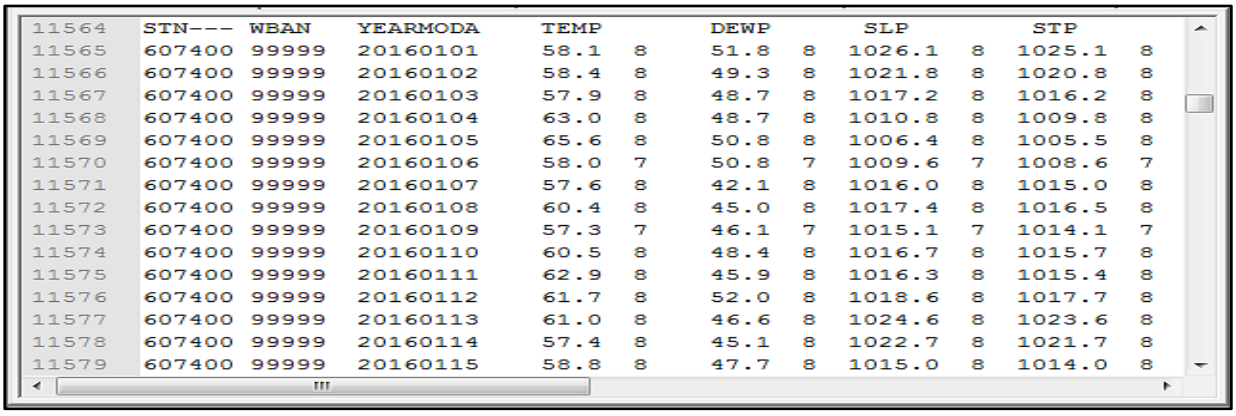
Trace Rainfall *– Should be typed as* ***0T***
Missing Data *– Should be left as blank. Any value that is not numeric will be regarded as missing data*
Cumulated Data *– Cumulated data should be type with* ***C****, e.g.* ***200C****. Values for preceding days be left blanks.*

6.4 Upload failures

Data upload may fail due to various reasons. Error messages will be given on each case. As much as possible the messages should be studied carefully and the problems describe therein be addressed. In case of station or element in the data that had not been defined in the metadata the affected records will be skipped and the stations/elements listed at the bottom of the import dialog. Data should therefore be corrected and reloaded.

7. Importing GTS data downloaded from NOAA – NCDC FTP site

The NOAA-NCDC FTP site has a huge archive of GTS daily observation data from all synoptic stations around the globe. Most of the data dates back to the early 1970s. The data goes through some QC at NOAA-NCDC and is updated on a daily basis. The data is publicly available in compressed format. Climsoft has a facility for ingesting the unzipped data from NOAA-NCDC. Figure30 below shows a screenshot of sample data downloaded from the NOAA-NCDC FTP site:



	STN---	WBAN	YEARMODA	TEMP		DEWP		SLP		STP	
11564											
11565	607400	99999	20160101	58.1	8	51.8	8	1026.1	8	1025.1	8
11566	607400	99999	20160102	58.4	8	49.3	8	1021.8	8	1020.8	8
11567	607400	99999	20160103	57.9	8	48.7	8	1017.2	8	1016.2	8
11568	607400	99999	20160104	63.0	8	48.7	8	1010.8	8	1009.8	8
11569	607400	99999	20160105	65.6	8	50.8	8	1006.4	8	1005.5	8
11570	607400	99999	20160106	58.0	7	50.8	7	1009.6	7	1008.6	7
11571	607400	99999	20160107	57.6	8	42.1	8	1016.0	8	1015.0	8
11572	607400	99999	20160108	60.4	8	45.0	8	1017.4	8	1016.5	8
11573	607400	99999	20160109	57.3	7	46.1	7	1015.1	7	1014.1	7
11574	607400	99999	20160110	60.5	8	48.4	8	1016.7	8	1015.7	8
11575	607400	99999	20160111	62.9	8	45.9	8	1016.3	8	1015.4	8
11576	607400	99999	20160112	61.7	8	52.0	8	1018.6	8	1017.7	8
11577	607400	99999	20160113	61.0	8	46.6	8	1024.6	8	1023.6	8
11578	607400	99999	20160114	57.4	8	45.1	8	1022.7	8	1021.7	8
11579	607400	99999	20160115	58.8	8	47.7	8	1015.0	8	1014.0	8

Figure30 - Sample data from NOAA-NCDC

To import GTS daily data from NOAA-NCDC;

(i) Select "**Data Transfer**" icon on the CLIMSOFT Welcome screen,
(ii) Select "**External Data**" menu;
(iii) 3. Select "**NOAA GTS**" to open the dialog and browse the data file as shown in Figure31 below.

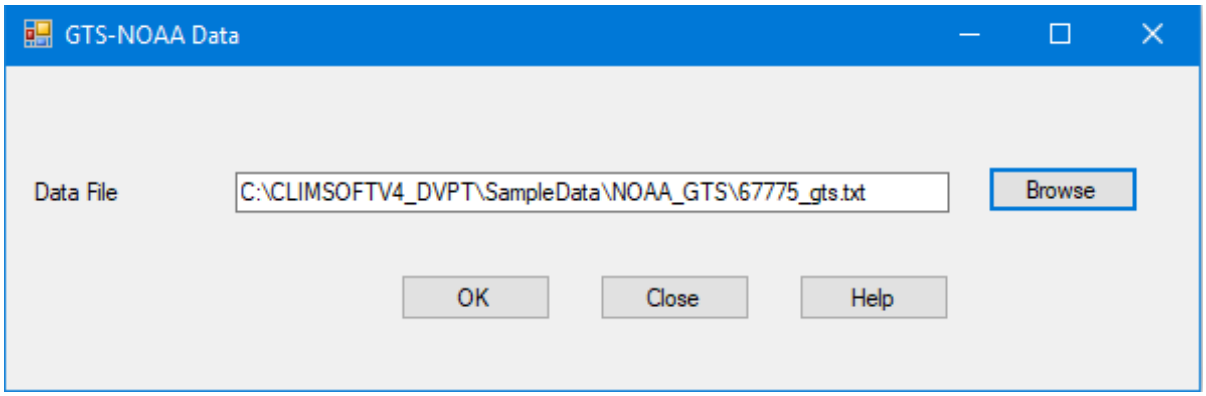


Figure31 - Importing data from a text file downloaded from NOAA-NCDC FTP site

NOTE:

*(i) A folder for GTS data must be configured under the "**General Settings**". This is used as a working area by the Climsoft application during the process of importing the GTS data. If the MariaDB server is being accessed over the network from a workstation, it would be ideal to map that folder on the workstation for easy access or viewing from the workstation. However, the data to be imported can be placed in any location that is accessible via the "**Browse**" button.*

*(ii) Since the GTS data would have gone through QC at NOAA-NCDC, the data is transferred to the "**observationfinal**" table.*

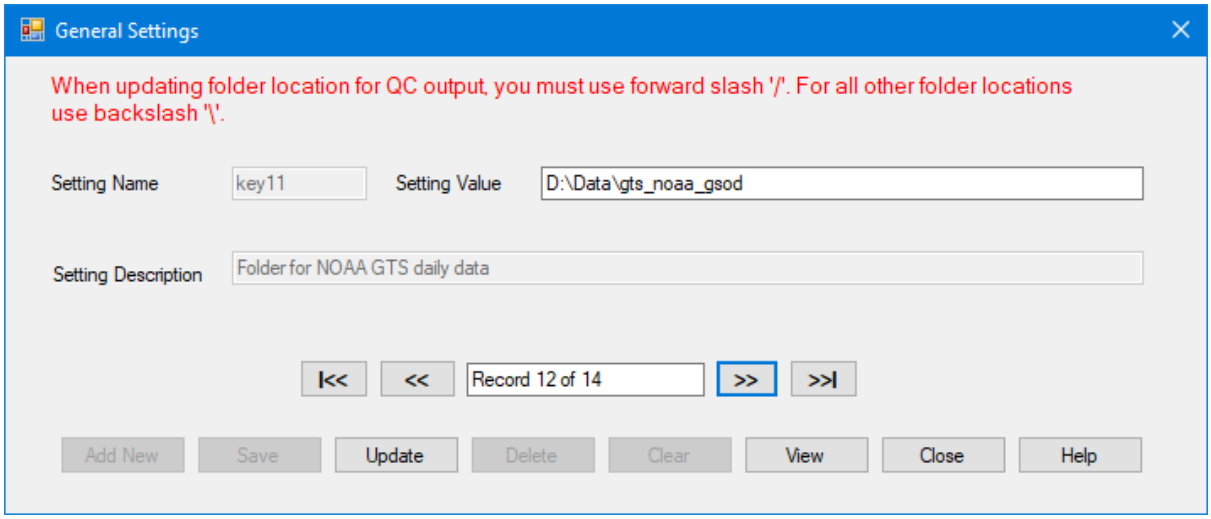


Figure32 - GTS-NOAA data Configuration

Note: For any question or further clarifications, contact the CLIMSOFT Helpdesk: support@climsoft.org